DISCUSSIONS

Discussion printed herein were presented at the 73d Annual Castings Congress of the American Foundrymen's Society and are grouped under the various Divisions and Committees and titles of the papers for which they were prepared. All discussions apply to technical papers in this volume.

Errata—

For complete accuracy and/or clarity: please note the following editors errors, and changes recommended by authors after printing.

Cold Box Process, Process Engineering Studies

p 17, column 3, last paragraph, temperature should read 77F (25C) and 55F (13C); p 18, column 2, paragraph 3, should read, "The cure rate was approximately 1.8 times as fast at 77F than at 55F, paragraph 4, 3d sentence, temperature should be 77F (25C); p 19, column 2, 1st paragraph, should read, "Using the family of curves representing . . .", last paragraph, 3d sentence should read, "To show this and to relate the different sizes of cores, a cross plot of data on Fig. 9 was prepared. This graph (Fig. 10) plots . . ."; p 20, column 1, 2d paragraph, should read, "Trial calculations reveal that cure rate is proportional to the 0.27 power of concentration"; second equation should read $\ln (Y\text{-}C) = A \text{ in } X + B \ln S$; p 22, in acknowledgements, should read Dr. J. M. Eakman.

The Role of Gases in the Structure of Cast Iron

Figures 8 and 9 reversed.

Effects of Selenium and Tellurium on the Structure of Cast Irons, etc.

Figures 17 and 18 reversed.

Calculation of Volumetric Mold Cavity Enlargement

Coauthor is W. D. Spiegelberg, not Spiegelburg; Figures 4 and 5 transposed.

Index of Discussion Participants

1. G. L. Armstrong, Ch Met, U.S. Reduction Co, East Chicago, Ind.
2. C. E. Nelson (retired), Dow Chemical Co, Daytona Beach, Fla.
3. J. J. Broecker, Rsch Engr, The Boeing Co, Commercial Airplane Div, Renton, Wash.
4. R. J. Maenner, Sr Met, Kaiser Aluminum, Chalmette, La.
5. W. A. Mader, VP, Oberdorfer Foundries, Inc, Syracuse, N.Y.
6. L. W. Sink, Met, Precision Castparts Corp, Portland, Ore.
7. R. Carlson, American Cast Iron Pipe Co, Birmingham, Ala.
8. W. F. Shaw, Mgr Fdy Rsch, IIT Research Institute, Chicago.
9. R. L. Lange, Met, The Advance Foundry Co, Dayton, Ohio.
10. C. E. Sims, Cslt, Battelle Memorial Institute, Columbus, Ohio.
11. P. A. Roeder, Asst Fdry Met, Sawbrook Steel Castings Co, Cincinnati, Ohio.
12. T. D. Jennings, Asst Supt, Fdry Div, Newport News Shipbuilding, Newport News, Va.
13. M. T. Rowley, Tech Dir—Nonferrous, American Foundrymen's Society, Des Plaines, Ill.
14. G. J. Vingas, Mgr Tech Serv, Dresser Minerals Div, Dresser Industries, Rolling Meadows, Ill.
15. A. D. Morgan, British Cast Iron Rsch Assn, Birmingham, England.
16. J. B. Caine, Cslt, Cincinnati, Ohio.
17. M. J. Granlund, Met, Abex Corp, Mahwah, N.J.

Basic Research Division

Hot-Tearing in Cast Metals, S. A. Metz and M. C. Flemings

T. D. JENNINGS.[12] Why did you choose compression and shear as the methods for initiating hot tears rather than tensile stress?

AUTHOR'S REPLY. We chose the compression and shear modes primarily because these, especially the shear mode, permit much easier study and interpretation of the mechanics of deformation than does the tensile mode. In addition, we believe many hot tears in practice are a result of strains that are at least partly shear type. We do plan, however, to do some testing with tensile strain at a later date.

Ductile Iron Division

Instantaneous Ladle Inoculation of Gray and Ductile Irons, A. J. Ridley and S. I. Karsay

R. CARLSON.[7] This is a factual presentation involving much laboratory work. The average foundryman would appreciate a few comments regarding some of the practical aspects, such as 1) does the 1-L rod oxidize after use and become less effective 2) when one rod is spent, does the last portion have a chance of entering the mold, or are the last few inches discarded?

AUTHOR'S REPLY. 1) The surface of the 1-L rod does oxidize after pouring stopped. This thin oxidized layer, however, does not decrease its further effectiveness for the oxide layer is washed off the moment pouring starts again 2) practical considerations will decide whether the last portion of the rod should be connected to a new one or it should be discarded. No dross defects were caused in experimental work even when the last bit of the rod was allowed to fall into the pouring basin.

W. F. SHAW.[8] In your work on instantaneous ladle inoculation have you attempted to evaluate the effectiveness of various ferrosilicons as inoculants for gray iron as opposed to nodular iron? In evaluating sprue inoculation a few years ago in a production foundry, I found that with nodular iron produced from an induction-melted base iron, both standard 85% FeSi (calcium and aluminum bearing) and most of the commercial gray iron inoculants containing about 60-65% Si were effective in reducing chill and increasing nodule count. However, in an acid cupola melted gray iron of close to 4.3% final carbon equivalent after ladle inoculation, the standard 85% FeSi when used as a sprue inoculant had essentially no effect on the graphite structure while the commercial gray iron inoculants were quite effective in promoting a random type A graphite.

AUTHOR'S REPLY. In our tests only one type of ferrosilicon was used for making the rods: Ca- and Al—bearing ferro-50%-silicon. We presently search for inoculants which are more effective than ordinary FeSi in irons of different types such as various cupola-melted irons. In this regard Mr. Shaw's experience is very encouraging.

Effect of the Use of Chills in Heavy Section Ductile Iron Castings, D. H. Withey and C. R. Loper, Jr.

R. L. LANGE.[9] The authors are to be commended for their investigation of the effect on graphite morphology by the use of chills on heavy sections. The subject paper makes reference to a prior work on this subject done by R. K. Buhr of Ottawa, Ont., Canada. Like Buhr, the authors draw certain conclusions based on a study of the microstructure of the various parts of the castings.

It is my opinion that identifying the abnormal structures found in the thermal centers of the castings, as grouped vermicular graphite, should be done with some reservations. Allowance should be made, I believe, for the possibility that in some cases this suspect material might be interdendritic porosity or shrink.

AUTHOR'S REPLY. It is quite reasonable that in many instances shrinkage has been mistaken as a type of nonspheroidal graphite in, or near, the thermal center of heavy section ductile iron castings. At the same time, however, it is known that nonspheroidal graphite shapes, such as vermicular graphite, are often found in these locations. Careful polishing and examination of the structure confirms the presence of graphite.

It would appear that several explanations could be given to the occurrence of vermicular graphite in these locations, explanations which have been set forth in the discussion. It must also be realized, however, that the thermal center of the casting is also that part of the casting toward which a great deal of segregation occurs, particularly segregation of certain alloys or residual elements. The increased amount of these elements at the thermal center of the casting then would favor nonspheroidal graphite shapes. On the other hand, the thermal center of the casting represents that section of the casting which solidifies at the slowest possible cooling rate. As such, it would be expected that the nodule count of spheroidal graphite would be considerably lower and therefore the opportunity of nonspheroidal graphite shapes to form in these locations would be greatly increased.

Light and Reactive Metals Division

Metallography as a Quality Control tool for KO-I Alloy Casting, F. R. Mollard

G. L. ARMSTRONG.[1] Does microshrinkage show as a black inclusion or black area after heat treatment?

AUTHOR'S REPLY. Microshrinkage cannot be visually detected in the fracture of heat-treated KO-I Alloy test bars. Microshrinkage voids are not connected and, therefore, do not form a path for the furnace atmosphere to oxidize the internal surface of the voids. This would be the only way by which a color change could take place during heat treatment.

Protective Atmospheres for Melting Magnesium Alloys, J. W. Fruehling and J. D. Hanawalt

C. E. NELSON.[2] Have the authors any data on comparative corrosion resistance (particularly in high humidity) of the best gas-treated versus flux-melted metal?

AUTHOR'S REPLY. The authors do not have any data on corrosion of magnesium from their gas atmosphere protected melts. Mr. Nelson's question is a natural one since with flux-melted metal there is always the possibility for flux contamination which would accelerate corrosion, particularly under conditions of high humidity. The absence of this concern with fluxless melting of magnesium is another advantage in addition to economy and absence of flux fumes in production operations.

Magnesium Loss During Chlorination of Aluminum Melts, B. Lagowski

J. J. BROECKER.[3] Because of air pollution problems we have never used chlorine. We use only nitrogen and have not, to my knowledge, ever had any dross problems. In fact, by our technique, we regularly meet MIL-A-21180 specifications with our castings. Might we expect any advantages in higher properties or cleaner metal by using chlorine, tablets or a 90-10 nitrogen-chlorine mixture?

AUTHOR'S REPLY. Although the question is not directly related to the paper, it is our opinion that if chlorine-containing media are used for degassing aluminum alloy melts, cleaner metal, giving higher properties, may be obtained more consistently than in the case of nitrogen degassing.

Dispersion of Graphite Particles in Aluminum Castings Through Injection of the melt, F. A. Badia and P. K. Rohatgi

R. J. MAENNER.[4] What minimum graphite content is necessary to obtain sig-

nificant improvement in resistance to galling? and how does alloy content affect dispersion of the graphite in the resulting casting? For example, what results would be expected in pure aluminum?

AUTHOR'S REPLY. The subject matter of the above paper does not include any wear testing of these graphitic aluminum alloys. The wear testing results are included in SAE Preprint 690275, January 1969. I believe the second question is covered in the section of the paper concerned with graphite distribution as affected by the aluminum-silicon-nickel base. As stated, in a hypoeutectic aluminum-silicon alloy graphite particles are generally found in the interdendritic regions associated with ternary eutectic. In the case of the near eutectic aluminum-silicon alloy the graphite particles seem to be entrapped in situ during solidification due to the short freezing range. A similar situation occurs in pure aluminum castings.

W. A. MADER.[5] Have you made any cost comparisons between the aluminum-graphite and aluminum-tin alloys? Have you made any studies on possible galvanic corrosion between the aluminum and the graphite in the aluminum-graphite alloys?

AUTHOR'S REPLY. Answer to the first question is no. To the second; no galvanic corrosion occurred in the relatively small number of tests made, possibly because of the cell effect of the graphite.

Development of Electroslag Melting Techniques for Titanium: Selected Properties of Fabricated Material, C. E. Armantrout and R. H. Nafziger

LARRY W. SINK.[6] Why did you use a nonconsumable titanium electrode for fusing the slag rather than a tungsten electrode, as is normally used for nonconsumable arc melts?

AUTHOR'S REPLY. Titanium was used as a nonconsumable electrode for fusing slag during the purification procedures for two reasons 1) to keep contamination of the slags by foreign material to the lowest possible level and 2) to act as a getter in an attempt to remove any materials from the slag that might subsequently react with the molten titanium.

Steel Division

The Influence of Casting Shape and Pouring Temperature on the Feeding Distance of Low Carbon Steel, S. B. Johnson and C. R. Loper, Jr.

L. W. SINK.[6] Did you attempt to calibrate your optical pyrometer for emissivity correction by checking an approximate freezing point of the alloy?

AUTHOR'S REPLY. Calibration of the optical pyrometer for emissivity correction was made by periodic comparison of the optical pyrometer readings with those obtained using a Pt-Pt, Rh thermocouple incased in a quartz protection tube. This technique enables a correction to be made over the entire range of temperature recording rather than at the lowest temperature of recording, the approximate freezing point of the alloy.

The Effect of Solidification Time and Nonmetallics on the Ductility of High Strength Steel Castings, P. F. Weiser and J. F. Wallace

L. W. SINK.[6] 1) What happens to strength in relation to local solidification time 2) does the shape of the ingot mold (the increased section for the riser) limit the length of columnar growth and increase local solidification time near the top of the columnar zone by decreasing the thermal gradient?

AUTHOR'S REPLY. 1) Local solidification time does not affect the yield and tensile strength of our test castings. Data to that extent has been published in reference 6 of the paper and is illustrated there in Fig. 17, 19 and 22, 2) the shape of the experimental casting and the mold material do affect the length of the columnar zone. Our uninoculated large cylindrical test castings generally exhibited a columnar zone up to the transition from the 4-in. diameter cylinder to the riser. Thermal analysis indicated that the unidirectionality of heat flow breaks down at the transition of cylinder to riser of our test casting. Incipient solidification at the top of the riser followed by seeding with dendrites that break off and sink contribute to the observed change of the as cast structure. Thermal analyses indicated a decrease in thermal gradient and an increase in solidification time with distance from the chill.

C. E. SIMS.[10] I proved to my own satisfaction many years ago that, other things being equal, the size of sulfide inclusions increases with longer solidification times. It is interesting to note the correlation of lower ductility with larger sulfides as shown in this paper. This appears contrary to the usual observation that types I and III sulfides give better ductility than does type II. I am puzzled, however, to understand how there can be a variation of volume percent of sulfide with constant sulfur content. Could it be that, because of flotation there is actually more sulfur where the sulfides are larger?

AUTHOR'S REPLY. I agree that our statement concerning the increase of inclusion size with longer solidification time is not new, that fact has been known for a considerable length of time. I believe that there is a slight misunderstanding regarding the effect of inclusion size and type of inclusions on ductility. Our findings published in reference 5 are in agreement with your findings that type I and III sulfides give better ductility then type II. However, we have also found that, in the extreme case where the columnar structure containing type II sulfides is tested in the direction of the grain, type II sulfides need not necessarily have a deleterious effect on ductility. This results from the perfect alignment of the type II sulfides with the direction of the grain and the long axis of the tensile specimen. This effect is illustrated in Fig. 15 of reference 5.

I am equally puzzled about the large variation in volume percent of sulfides at constant sulfur level. Flotation can definitely contribute to this effect. I recall, however, that at the very beginning of our investigation, repeated checks of the sulfur content at the top and bottom of the casting were made without showing significant increase in sulfur at the top of the casting. I suspect that the method of measuring the volume fraction of sulfides may have contributed somewhat to the large variation of volume fraction sulfides.

Manufacturing Castings by Electroslag Remelting Process
G. K. Bhat

P. A. ROEDER.[11] 1) It was mentioned that during this remelting process a thin slag layer is formed at the casting wall—mold wall interface. Is the thickness of this layer sufficiently constant and predictable that stringent dimensional tolerances could be maintained? This would be a necessity if the process were to be applied to castings now made by conventional casting techniques. 2) Were any quantitative measurements made of surface finish obtained during this study? If so, what range of values were obtained?

AUTHOR'S REPLY. 1) It can be said that the thickness layer is indeed predictable and that stringent dimensional tolerances could be maintained. However, this statement applies only to castings with very large radiis of curvature. Special fluxes which will provide very thin slag can be designed and used provided that no metal purification is required. 2) The alloy content of the metal and the flux composition, consistancy of electrical parameters are the controlling factors in the surface finish obtained. Specific measurements of the surface obtained have not yet been made. However, while melting 52100 grade steel very smooth surface finish has been achieved. The ingots of alloys Inco 700, Inco 718 and Astroloy also displayed very smooth surface finish which was suitable for warm extrusion. The mandrels in the extrusion press are not scored.

Sand Division

Compactability Testing, a New Approach in Sand Research
F. Hofmann, H. W. Dietert and A. L. Graham

M. T. ROWLEY.[13] The significance of the compactability test, both in research and control work, is certain to become evident as more foundrymen put it to use. The authors are to be

commended for developing this concept of testing.

Since many will refer to this paper, readers are cautioned that there is one statement which is rather misleading and confusing. With reference to Fig. 2, the authors state: "The bulk density of the sand before compaction predetermines its compactibility, and consequently the compactability curves (Fig. 2b) follow the same pattern as the bulk density curves (Fig. 2a)." This suggests that compactability and initial bulk density vary in a direct rather than in an inverse relationship. The two figures because of their implied similarity seem also to confirm this.

The reader should note that the ordinate scale for Fig. 2b has been inverted and that compactability actually increases with moisture content, as the authors proceed to explain. The same observation applies to Fig. 3a.

AUTHOR'S REPLY. In those graphs where compactability has been plotted as the ordinate, the scale has been deliberately inverted so that the curve is a graphic representation of the height of sand. This convention was adopted for practical reasons and in the hope that it would make the graphs easier to interpret. The height of the specimen and the height of sand in the flask are greatest at zero compactability. As the percentage compactability increases, the sand height decreases. Through the inversion of scale, the lines become a realistic projection of the height of sand. A further result of this inversion is that the compactability-moisture curves become similar to and more directly comparable with the moldability-moisture and bulk density-moisture curves with which most people are familiar.

Mr. Rowley's point is valid. It is only because we have adopted this form of plot that the compactability curves follow the same pattern as the bulk density curves. The curves match, but the percentage compactibility values are inversely related.

G. J. Vingas.[14] Since compactability developed and described by this paper is directly related to bulk density of sand, the question arises why is not bulk density measured instead of compactability which requires sophisticated and rather expensive equipment.

AUTHOR'S REPLY. Riddled bulk density can certainly be used to measure the degree of temper of a given sand. However, it must be recognized that this test involves a weight measurement and, as a result, the values are influenced by the specific gravity of the mix. As a consequence of this, sands with different specific gravities would not be at the same degree of temper even though the riddled bulk densities were identical. Also, the test does not involve mechanical compaction and it is therefore not a direct measure of sand performance on the molding machine.

The obective in this research was to develop a degree of temper test that would have universal application, independent of the specific gravity. Further, there was a need for a means to evaluate degree of temper as it affects sand performance on the molding machine. The compactability test fulfills both objectives as it is strictly volumetric, and is directly analagous to the compaction on a squeeze molding machine. These points represent major advantages over the older riddled density test.

If a foundry is now properly preparing test specimens with squeeze equipment, the compactability test can be added to the test program by adding a simple accessory consisting of a scale, a means of taking up part of the volume in the specimen tube and a funnel and riddle for filling the specimen tube.

The test is so simple that it readily lends itself to automatic testing and can be coupled with automatic compression testing for direct in-plant control.

Evaluation of Tests for Control of Foundry Sand Systems

A. E. Murton

A. D. MORGAN.[15] We would have expected that the increased water content shown in Fig. 9 and level of dead clay would have resulted in the high green strength fixtures shown in Fig. 15 for series 3 mixture, and feel that such a sand would be difficult to compact on a normal foundry jolt-squeeze machine. The author had the advantage of pneumatically ramming these sands by hand to a fixed hardness figure, and experience shows that strongly bonded sands can be very well compacted providing that sufficient energy is available. How would such a sand having high total clay content and high moisture handle in a foundry and compact on a jolt-squeeze machine? Did the author experience balling-up (becoming oolitic) or formation of pellets?

Presumably a high grade bentonite was used for these tests. Many iron foundry sands use clays of relatively low fusion point. The continued reuse of such sands increases the amount of sintering taking place, resulting in an increase in permeability and poor casting surface finish. For this reason it is often necessary to reject burnt sand and replace this with fresh material. Has the author taken this fact into consideration, apart from his comments in section 4 of the summary? because the castings appear to show a gradual deterioration in surface finish as the amount of clay increases.

I would like to commend the author's heroism in tackling this difficult project and hope that he will continue to explore possible tests for the control of sand systems.

AUTHOR'S REPLY. As shown in the paper, the sand for the thirtieth use required less ramming energy to obtain a mould hardness of 90 than it did for the first use. The sand was not used on a jolt-squeeze machine but experience has shown that a sand with a moldability of 75 should work satisfactorily. Although the moldability was kept constant, the sand for the thirtieth use, at 4% moisture, felt drier than it did at 2.3% moisture for the sixth use. No oolitization, or formation of pellets, was observed. However, the sand contained much less dead-burnt clay than those studied by Dr. Hoffmann.

It is questionable whether deterioration of surface finish with use is caused by lowered sintering point, or by other factors. Work with different clays, and with metals having different pouring temperatures, would be required to establish this. However, the surface does deteriorate with use and some new sand additions would be required, even for the high quality bentonite used in these tests.

J. B. CAINE.[16] Murton is to be congratulated for an important contribution to foundry sands technology. Actual casting tests as conducted are a necessity for a true evaluation of sand properties. Unfortunately casting tests increase the cost greatly. The good citizens of Canada should be thanked for their support.

There can be little question that wet layer is a factor in certain types of scabbing. One point may be important. The properties and occurrence of the wet layer are only one of a number of independent factors affecting scabbing. Metal flow, metal temperature, sand density, shape and extent of the sand surface are certainly significant factors and perhaps are more important than the properties of the wet layer. Therefore, it is quite probable that it will never be possible to coorelate scabbing directly with any sand property and the absence of perfect correlation should not distract from the importance of the experimental data.

AUTHOR'S REPLY. In addition to the factors mentioned, which were kept constant, so far as is possible in normal foundry practice, other sand properties such as compressive stress as measured by Boenisch are probably important. It would not be expected that scabbing could be completely correlated to any one property.

M. J. GRANLUND.[17] The author is to be commended on the excellent work in his paper. One point that I wonder about is the mixing cycle for mixture 2, because of type of mixer used the mixing time for this mix should be equal to mix 1. Also if the scab rating of mix 3 is superimposed on any of the property curves it seems questionable if any of the properties would indicate casting quality.

I notice very little scabbing in any of scab blocks photographed.

AUTHOR'S REPLY. The primary purpose of the investigation was to evaluate sand tests, not to test preparation methods. The stess indicated that the sand mixed for three minutes was better than that mulled for six minutes. The castings were made with these two sands to determine if the tests were correct. If the purpose of the tests had been to compare mixing and mulling

the preparation time should have been the same.

The quality of castings deteriorates more than any of the test properties indicate should have been the case. A test, such as Boenisch's compressive stress test, may be required to measure the effect of the buildup of deadburnt clay.

Enough scabbing was obtained to use as a basis for the estimation of sand quality. The castings shown in the illustrations are representative, not the worst ones. Examples of bad scabbing are shown in the illustrations for heats 7 and 10, series 2, and heat 20, series 3.

AUTHORS INDEX

SUBJECT INDEX

A Word of Explanation About This Index

The index is printed in a computer type format. Key index terms are listed in alphabetical order in bold face type. And the exact titles of the articles containing these key index terms are listed below along with the first pages of the articles.

TRANSACTIONS
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Proceedings Summary of 73rd Annual Meeting

The 73rd Casting Congress of the American Foundrymen's Society was held in Cincinnati May 5 to 9, 1969. A total of 84 papers were presented at 40 technical sessions.

The Charles Edgar Hoyt Memorial Lecture was delivered by J. W. Meier, Dept. Energy, Mines & Resources, Ottawa, Canada, on the subject, "Non-ferrous Metals Castings and Present." This outstanding paper is printed beginning page 97 of this volume.

A summary of sessions follows:

Monday, May 5

8:00 AM—Authors-Chairmen Breakfast

9:30 AM—Pattern Session

Presiding—R. LeMaster, Nelson Pattern Co., Milwaukee, J. F. Roth, Cleveland Standard Pattern Works, Cleveland.

Foamed Plastic Applications in the Pattern Shop—M. K. Young, U.S. Gypsum Co., Chicago.

Pattern Requirements for Permanent Mold Tooling—G. W. Stahl, Stahl Specialty Co., Kingsville, Mo.

9:30 AM—Sand Session

Presiding—C. E. Wenninger, International Minerals & Chemical Co., Growth Science Center, Libertyville, Ill.
J. Toth, Harry W. Dietert Co., Detroit.

Durability of Bonding Clays, Part IV—Influence of Clay Alteration on Casting Finish—C. A. Sanders, R. L. Doelman, American Colloid Co., Skokie, Ill.

Condensation Zones in Molding Sand Bonded with Southern Bentonite (AFS Research)—A. B. Draper, Pennsylvania State University, University Park, Pa.

9:30 OM—Brass & Bronze Session

Presiding—W. H. Baer, Mobility Equipment Rsch. & Dev. Center, Department of the Army, Fort Belvoir, Va.
S. A. Schack, American Smelting & Refining Co., Whiting, Ind.

Effects of Chromium and Silicon Additions to Cast Cupronickels—F. J. Ansuini, F. A. Badia, The International Nickel Co., Inc., Suffern, N.Y.

The Embrittlement of Babbitt-Bronze Bonds—J. H. Hoke, Pennsylvania State University, University Park, Pa.; V. D. Coombs, General Electric Co., Erie, Pa.

9:30 AM—Light & Reactive Metals Session

Presiding—K. E. Nelson, Dow Chemical Co., Metals Products Dept., Midland, Mich.
W. H. Cox, General Motors Institute, Flint, Mich.

Magnesium Loss during Chlorination of Aluminum Melts—B. Lagowski, Dept. of Energy, Mines & Resources, Ottawa, Ont., Canada.

Dispersion of Graphite Particles in Aluminum Castings Through Injection of the Melt—F. A. Baida, P. K. Rohatgi, The International Nickel Co., Inc., Suffern, N.Y.

Dimensioning of Feeders for Al-Cu-Si Alloy—LM4—N. S. Mahadevan, M. S. Seshadri, Indian Institute of Science, Bangalore, India; A. Ramachandran, Indian Institute of Technology, Madras, India, presented by S. Ghosh, Chrysler Corp., Detroit.

12:00 Noon—Brass & Bronze Round Table Luncheon

Presiding—C. W. Ward, Jr., Benjamin Harris Co., Chicago Heights, Ill.
C. V. Knobeloch, R. Lavin & Sons, Inc., Bala-Cynwyd, Pa.
A. W. Bardeen, Ohio Brass Co., Mansfield, Ohio.

Subject: How to Get Foremen and Superintendents into the Smaller Foundries.

Speaker: E. J. Walsh, Foundry Educational Foundation, Cleveland.

2:00 PM—Operating Session

Presiding—K. E. Nelson, Dow Chemical Co., Midland, Mich.
C. W. Ward, Jr., Benjamin Harris Co., Chicago Heights, Ill.

Panel Discussion: Evaluation of Modern Core Making Practices.

Speakers: Shell Process—L. E. Wile, Lynchburg Foundry Co., Lynchburg, Va.
Hot Box Process—V. Rowell, Construction Aggregates Corp., Grand Haven, Mich.
CO_2-Silicate Process—R. K. Meyers, The Lunkenheimer Co., Cincinnati.
Air-Set Process—E. F. Koglin, FEPCO, Chicago.

2:00 PM—Brass & Bronze Session

Presiding—J. Hartman, Universal Brass Foundry, Chicago.
D. G. Schmidt, H. Kramer & Co., Chicago.

Repair by Welding of Cast Copper-Base Alloys—M. J. Nolan, Dept. of Energy, Mines & Resources, Ottawa, Ont., Canada.

Development of Improved Mold Materials for Copper Base Alloy Diecasting—J. H. Humphrey, D. E. Groteke, American Standard, Inc., Louisville, Ky.; A. Machonis, International Copper Research Assn., New York.

Development of Expendable Core Systems for Copper Alloy Die Castings—D. E. Groteke, J. H. Humphrey, American Standard, Inc., Louisville, Ky.

2:00 PM—Light & Reactive Metals Session

Presiding—S. Ghosh, Chrysler Corp., Detroit.
R. E. Edelman, Pitman-Dunn Labs., Frankford Arsenal, Philadelphia.

Thermal Behaviour of End Chills—S. Seshna, M. R. Seshadri, Indian Institute of Science, Bangalore, India; A. Ramachandran, Indian Institute of Technology, Madras, India, presented by Y. P. Telang, Ford Motor Co., Dearborn, Mich.

New-Generation High-Strength Aluminum Casting Alloys—K. J. Oswalt, Northrop Norair, Hawthorne, Calif.

Alloying Behavior of Thulium and Lutetium with Plutonium—M. R. Conner, J. W. Anderson, D. R. Harbur, Los Alamos Scientific Laboratory, Los Alamos, N.M.

4:00 PM—Brass & Bronze Session

Presiding—R. A. Colton, Dee Brass Foundry, Houston,
F. L. Riddell, H. Kramer & Co., Chicago.

Riser Design and Feeding Distance of Manganese Bronze Castings (AFS Research)—R. A. Roberts, C. R. Loper, Jr., University of Wisconsin, Madison, Wis.; D. R. Poirier (formerly University of Wisconsin), University of Bridgeport, Bridgeport, Conn.

The Effect of Solidification Time on the Properties of Copper-Base Alloys (AFS Research)—B. D. Bhawalkar, C. R. Loper,

Jr., University of Wisconsin, Madison, Wis.; D. R. Poirier (formerly University of Wis.), University of Bridgeport, Bridgeport, Conn.

4:00 PM—Sand Session

Presiding—L. E. Wile, Lynchburg Foundry Co., Lynchburg, Va.
S. A. Wick, New Jersey Silica Sand Co., Millville, N.J.

Cold Box Process—Research to Reality—A. Dorfmueller, Jr., R. J. Schafer, Ashland Chemical Co., Cleveland.

Nitrogen-Free Resin-Coated Sand for Shell Moulding—F. LeServe, Feslente Ltd., Redhill, Surrey, England: P. Lemon, The Borden Chemical Co. (U.K.) Ltd., North Baddesley, Hampshire, England.

4:00 PM—Light & Reactive Metals Session

Presiding—W. Jonsson, Apex Smelting Co., Chicago.
J. A .Miller, American Smelting & Refining Co., Detroit.

Effect of Section Thickness on the Mechanical Properties of Thin Section Aluminum Alloy Sand Castings—S. Lipson, F. Ripkin, Pitman-Dunn Lab., Frankford Arsenal, Philadelphia.

The Importance of Thermal Balance in Production of Large Die Castings—G. R. Wlodyga, Ford Motor Co., Detroit.

4:00 PM—Pattern Session

Presiding—F. P. Gill, Taylor & Boggis Foundry Co., Inc., Cleveland.
H. W. Mess, John Deere Planter Works, Moline, Ill.

Design Problems of Urethane Foundry Pattern Equipment—R. LeMaster, Nelson Pattern Co., Milwaukee

Panel Discussion: What's Your Pattern Problem?

Speakers: L. H. Kinney, Chrysler Corp., Detroit
J. F. Roth, Cleveland Standard Pattern Works, Cleveland.
R. LeMaster, Nelson Pattern Co., Milwaukee
M. K. Young, U.S. Gypsum Co., Chicago.

8:00 PM—Brass & Bronze Shop Course

Presiding—R. F. Schmidt, Ajax Metal Div., H. Kramer & Co., Philadelphia
R. W. Cologgi, Gould Pumps, Inc., Seneca Falls, N.Y.

Subject: Induction Melting in the Bronze Foundry.

Speakers: Channel Furnaces—V. Haines, Camsco Foundry, Inc., Azuza, Cal.

180-Cycle Coreless Furnace—Thos. Baatz, Bunting Brass & Broze Co., Toledo.

High Frequency Coreless Furnace—G. W. Williams, Janney Cylinder Div., Philadelphia

8:00 PM—Sand Shop Course

Presiding—R. L. Doelman, American Colloid Co., Skokie, Ill.
J. A. Schumann, Carpenter Bros., Inc., Milwaukee

Subject: How Reliable Are Your Sand Tests?

Speakers: G. DiSylvestro, American Colloid Co., Skokie, Ill.
J. S. Schumacher, Consultant, Cincinnati, R. M. Praski, Harry W. Dietert Co., Detroit.

Tuesday, May 6

8:00 AM—Authors-Chairmen Breakfast

9:00 AM—National Castings Council Meeting & Luncheon

9:30 AM—Malleable Iron Session

Presiding—H. J. Heine, Malleable Founders Society, Cleveland.

Mold and Core Aggregate Effects on Defects in White Iron Castings, Part I—Shrinkage Induced Defects—R. W. Heine, University of Wisconsin, Madison, Wis.

Thermodynamics and Kinetics of Nitrogen Solution in Foundry Iron (AFS Research)—R. D. Pehlke, University of Michigan, Ann Arbor, Mich.

9:30 AM—Education Session

Presiding—J. O. Denny, J. S. McCormick Co., Pittsburgh

Subject: Plant Protection Seminar.

Moderator: A. R. Frye, Wackenhut Corp., Coral Gables, Fla.

Speakers: E. L. Robbins, Reynolds Metals Co., Richmond
D. W. Egbert, Gary Steel Works, Gary
D. Girton, Armco Middletown Works, Middletown, Ohio.

9:30 AM—Sand Session

Presiding—G. DiSylvestro, American Colloid Co., Skokie, Ill.
D. R. Phillips, Dominion Engineering Works Ltd., Montreal, Que., Canada.

Effect of Seacoal on Transformation Zones of a Scabbing Sand (AFS Research)—S. McCuen, C. T. Marek, Purdue University, Lafayette, Ind.

Sand-Bentonite-Water Research and Basic Clay-Water Concepts—C. E. Wenninger, W. J. Lang, International Minerals & Chemical Corp., Libertyville, Ill.

9:30 AM—Industrial Engineering Session

Presiding—J. Schmitz, Forest City Foundries Co., Cleveland.
P. J. Pyatt, Gra-Iron Foundry Corp., Marshalltown, Iowa.

Procedure for Evaluation of Proposed Changes to Plant Layout and Equipment—C. E. Fausel, Lester B. Knight & Associates, Inc., Chicago

It Pays to Use Efficient Cutting Snagging Wheels—D. R. Stewart, Stewart Instrument Co., Detroit

Safety for Portable Grinders and Wheels—G. R. Blake, Norton Co., Worcester, Mass.; E. Parker, Ingersoll-Rand Co., Athens, Pa.

9:30 AM—Gray Iron Session

Presiding—H. H. Wilder, Pickands Mather & Co., Cleveland.
R. M. Nowicki, Ford Motor Co., Detroit.

On Dendrites and Eutectic Cells in Gray Iron—R. W. Heine, C. R. Loper, Jr., University of Wisconsin, Madison, Wis.

Effect of Certain Additions to the Melt on the As-Cast Dendritic Microstructure of Gray Cast Iron—P. K. Basutkar, S. A. Yew, C. R. Loper, Jr., University of Wisconsin, Madison, Wis.

Effect of Microstructure and Residual Stresses on the Sonic Properties of Gray Cast Iron—T. Morooka, Y. Sugiyama, S. Ito, Musashi Institute of Technology, Setagayaku, Tokyo, Japan—Presented by D. E. Krause, Gray Iron Research Institute, Columbus, Ohio.

12:00 Noon—Joint Gray-Ductile-Malleable Iron Round Table Luncheon

Presiding—R. M. Nowicki, Ford Motor Co., Detroit.
T. D. Hutchinson, Erie Malleable Iron Co., Erie, Pa.

Subject: Know Your Competition: Processes, Foreign and Taxes.

Speaker: C. A. Sanders, American Colloid Co., Skokie, Ill.

12:00 Noon—Pattern Round Table Luncheon

Presiding—M. K. Young, U. S. Gypsum Co., Chicago.
L. H. Kinney, Chrysler Corp., Detroit.

Subject: Polystyrene Patterns for the Magnetic Molding Process.

Speaker: J. H. Schaum, Editor, MODERN CASTING, Des Plaines, Ill.

12:00 Noon—Light & Reactive Metals Round Table Luncheon

Presiding—W. Jonsson, Apex Smelting Co., Chicago.
R. G. Brown, Wellman Dynamics Corp., Bay City, Mich.

Subject: Product Liability.

Speaker: Dr. Robert C. McMaster, Ohio State Univ., Columbus, Ohio.

2:00 PM—Malleable Iron Session

Presiding—H. R. Howard, Marion Malleable Iron Co., Marion, Ind.
F. W. Jacobs, Texas Foundries, Inc., Lufkin, Texas.

Mold and Core Aggregate Effects on Defects in White Iron Castings—Part 2: Strain Induced Defects—R. W. Heine, V. Sharma, University of Wisconsin, Madison, Wis.

Age Hardening Ferritic Malleable—P. B. Burgess, Hayes-Albion Corp., Albion, Mich.

Gray Iron Rim in Malleable Iron—T. D. Hutchinson, Erie Malleable Iron Co., Erie, Pa.

2:00 PM—Plant & Plant Equipment Session

Presiding—W. E. Schulze, Caterpillar Tractor Co., Mapleton, Ill.
T. P. Norwood, Woodward Corp., Lynchburg Foundry Div., Lynchburg, Va.

Subject: Mechanical Matchplate Molding.

Speakers: G. Koren, Beardsley & Piper Div., Petitbone-Mulliken Corp., Chicago.
J. Petroskey, Disamatic, Inc., Chicago.
L. T. Lowrey, Harrison Machine Co., Erie, Pa.
W. Wilmot, Herman Penumatic Machine Co., Zelienople, Pa.
V. Janis, Hunter Automated Machinery Corp., Schaumberg, Ill.

2:00 PM—Sand Session

Presiding—G. M. Etherington, Abex Railroad Products Div., Mahwah, N.J.
E. C. Troy, National Engineering Co., Chicago.
Calculation of Volumetric Mold Cavity Enlargement—W. W. Timmons, W. D. Spiegelberg, J. F. Wallace, Case Western Reserve University, Cleveland.
Mechanisms of Metal Penetration in Foundry Molds—J. M. Svoboda, The Falk Corp., Milwaukee, Wis.; G. H. Geiger, University of Illinois at Chicago Circle, Chicago.

2:00 PM—Pattern Session

Presiding—M. K. Young, U.S. Gypsum Co., Chicago.
L. H. Kinney, Chrysler Corp., Detroit.
Unicast Ceramic Molding in the Pattern Shop—R. E. Greenwood, Unicast Development Corp., Pleasantville, N.Y.
Your AFS Program & Papers Committee in Action.

2:00 PM—Gray Iron Session

Presiding—W. W. Holden, Pickands Mather & Co., Cleveland.
H. E. Barnum, Foote Mineral Co., Dearborn Heights, Mich.
Effects of Selenium and Tellurium on the Structure of Cast Irons and Their Dependence on Hydrogen Content—J. V. Dawson, British Cast Iron Research Association, Alvechurch, Birmingham, England.
Trace Elements in Cast Iron (AFS Research)—R. L. Naro, J. F. Wallace, Case Western Reserve University, Cleveland.
Designing Cast Components for V-8 Engines—J. L. Flitz, Central Foundry Div., GMC, Saginaw, Mich.

2:00 PM—Industrial Engineering Session

Presiding—F. L. Lewis, Buckeye Steel Castings Co., Columbus, Ohio
S. R. Latona, Ernst & Ernst, Buffalo, N.Y.
Panel Discussion: Incentive Vs. Non-Incentive Operations.
Speakers: D. Y. Clem, McConway & Torley Corp., Pittsburgh
J. Henderson, Buckeye Steel Castings Co., Columbus, Ohio.

4:00 PM—Malleable Iron Session

Presiding—D. L. Hunter, Erie Malleable Iron Co., Erie Pa.
P. F. Ulmer, Link-Belt Div., GMC Corp., Indianapolis, Ind.
Riser Design—C. R. Loper, Jr., R. W. Heine, R. A. Roberts, University of Wisconsin, Madison, Wis.
Routine Analysis of Malleable Iron Using the Atomic Absorption Spectrometer—T. D. Hutchinson, Erie Malleable Iron Co., Erie, Pa.

4:00 PM—Light & Reactive Metals Session

Presiding—D. L. LaVelle, American Smelting & Refining Co., South Plainfield, N.J.
E. L. Rooy, Aluminum Company of America, Cleveland.
Casting and Mould Design Effects on Shrinkage Porosity of Light Alloys—D. R. Irani (formerly at The University, Edgbaston, Birmingham, England), Renfrew, Ont., Canada; V. Kondic, The University, Edgbaston, Birmingham, England.
Research upon Unsoundness, Structure and Ductility in Aluminum-Base Cast Alloys (AFS Research)—F. St. John, W. Wu, R. Miller, University of Bridgeport; J. T. Berry, Climax Molybdenum Co., New York.

4:00 PM—Joint Gray-Ductile Iron Shop Course

Presiding—T. K. McCluhan, Union Carbide Corp., Niagara Falls
E. Beyerlein, Grede Foundries, Inc., Spring City Div., Waukesha, Wis.
Subject: Fundamentals of Alloying and Inoculation.
Speaker: J. F. Wallace, Case Western Reserve University, Cleveland.

6:00 PM—Canadian Reception

Presiding—M. Reading, Foeseco Canada, Ltd., Guelph, Ont., Canada.

7:00 PM—Sand Dinner

Presiding—C. A. Sanders, American Colloid Co., Skokie, Ill.
G. J. Vingas, Dresser Minerals Div., Dresser Industries, Rolling Meadows, Ill.
AFS Vice-President J. O'Meara.
Subject: Control of the Molding Sand System.
Speaker: H. G. Levelink, Gieterijcentrum TNO, Delft, The Netherlands.

Wednesday, May 7

7:30 AM—Authors-Chairmen Breakfast

9:00 AM—Charles Edgar Hoyt Memorial Lecture

Presiding—AFS Vice-President J. O'Meara.
Lecturer—J. W. Meier, Dept. of Energy, Mines & Resources, Ottawa, Ont., Canada.
Subject: Nonferrous Metals Castings—Past and Future

10:00 AM—3rd World Lecture

Presiding—AFS Past President C. F. Seelbach, Jr.
Lecturer—I. C. H. Hughes, The British Cast Iron Research Assn., Alvechurch, Birmingham, England.
Subject: The Role of Gases in the Structure of Cast Irons.
Response: A. W. Bardeen, Ohio Brass Co., Mansfield, Ohio.

12:00 Noon—President's Luncheon & Annual Business Meeting

Presiding—AFS President Bernard N. Ames.
President's Annual Address.
Introduction of New Directors.
Presentation of:
Apprentice Contest Awards
AFS Awards of Scientific Merit
AFS Service Citations
T&RI Trustee Award
Howard F. Taylor Award

2:30 PM—Joint Gray-Ductile Iron Session

Presiding—R. L. Doelman, American Colloid Co., Skokie, Ill.
J. F. Wallace, Case Western Reesrve University, Cleveland.
Instantaneous Ladle Inoculation of Gray and Ductile Irons—A. J. Ridley, S. I. Karsay, Quebec Iron & Titanium Corp., Sorel, Que., Canada.
Oxygen Content and Its Effects on Solidification of Cast Irons (AFS Research)—C. Henschel, R. W. Heine, University of Wisconsin, Madison, Wis.
Computer Control Applied to Cupola Melting—R. T. Duerigen, Chrysler Corp., Indianapolis, Ind.

2:30 PM—Management Session

Presiding—H. H. Kessler, Sorbo-Mat Process Corp., St. Louis, Mo., Meehanite Metal Corp., White Plains, N.Y.
Achieving Continuing Excellence—C. E. Drury, Central Foundry Div., GMC, Saginaw, Mich.
Compliance with New Walsh-Healey Act Requirements—W. B. Huelsen, American Foundrymen's Society, Des Plaines, Ill.

2:30 PM—Sand Session

Presiding—C. A. Sanders, American Colloid Co., Skokie, Ill.
AFS Vice-President J. O'Meara.
The Annual Silver Anniversary Paper: Seacoal and Fuel Oil in Molding Sand—E. C. Zirzow, Werner G. Smith, Inc., Cleveland.

2:30 PM—Light & Reactive Metals Session

Presiding—S. Lipson, Pitman-Dunn Lab., Frankford Arsenal, Philadelphia,
R. C. Boehm, The A. C. Williams Co., Ravenna, Ohio.
Development of Electroslag Melting Techniques for Titanium: Selected Properties of Fabricated Material—C. E. Armantrout, R. H. Nafziger, U.S. Bureau of Mines, Albany, Ore.
Protective Atmospheres for Melting Magnesium Alloys—J. W. Fruehling, J. D. Hanawalt, University of Michigan, Ann Arbor, Mich.

Metallographic Quality Control of KO-1 Alloy—F. R. Mollard, Aluminum Div.; Olin Mathieson Chemical Corp., New Haven, Conn.

6:00 PM—Speakers Table Reception, AFS Annual Banquet

7:00 PM—AFS Annual Banquet Dinner & Program

Presiding—AFS President Bernard N. Ames
Presentation of AFS Gold Medal Awards

Thursday, May 8

8:00 AM—Authors-Chairman Breakfast

9:30 AM—Steel Session

Presiding—W. K. Grant, Abex Corp., Elyria, Ohio.
W. C. Wick, Burnside Steel Foundry Co., Chicago.

Precision-Cast Superalloy Dies for Isothermal Forging of Titanium Alloys—J. S. Prasad, T. Watmough, IIT Research Institute, Chicago.

Pressure-Vacuum Induction Melting—W. F. Moore, A. J. Kiesler, General Electric Co., Schenectady, N.Y.

9:30 AM—Sand Session

Presiding—J. S. Schumacher, Consultant, Cincinnati.
B. H. Booth, Carpenter Bros., Inc., Milwaukee,

Microwave Energy in the Foundry—R. Schroeder, General Motors Research Laboratory, Warren, Mich.; W. S. Hackett, Central Foundry Div., GMC, Saginaw, Mich.

Clay Technology—Durability of Bonding Clays, Parts VI through X—R. L. Doelman, C. A. Sanders, American Colloid Co., Skokie, Ill.

9:30 AM—Air Pollution Session

Presiding—G. E. Tubich, G. E. Tubich & Associates, Grand Rapids, Mich.
H. J. Weber, American Foundrymen's Society, Des Plaines, Ill.

Panel Discussion: Air Pollution Equipment at Work.

Speakers:
Fabric Filtration and the Foundry Industry—V. E. Schoeck, The Pangborn Corp., Hagerstown, Md.
Wet Collection Principles—D. E. Bonn, American Air Filter Co., Inc., Louisville, Ky.
Fan Noise and Vibration—T. Barnhart, The New York Blower Co., LaPorte, Ind.
Heat Exchangers and the Foundry—R. D. Wright, United McGill Corp., Columbus, Ohio.

9:30 AM—Joint Gray-Ductile Iron Session

Presiding—W. P. Shulhof, Central Foundry Div., GMC, Saginaw, Mich.
R. A. Clark, Union Carbide Corp., Mining & Metals Div., Niagara Falls,

Effect of Solidification Time and Section Size on the Mechanical Properties and Microstructures of High Carbon Ferrous Alloys (AFS Research)—C. R. Loper, Jr., C. L. Babu, P. K. Basutkar, D. J. Wilson, University of Wisconsin, Madison, Wis.

Stresses in As-Cast and Stress-Relieved Iron Castings—F. E. Kasch, Gray Iron Research Institute, Columbia, Ohio
P. J. Mikelonis, Grede Foundries, Inc. Milwaukee, Wis.

Structures and Properties of Iron Cast in Permanent Molds (AFS Research)—R. R. Skrocki, J. F. Wallace, Case Western Reserve University, Cleveland.

12:00 Noon—Ductile Iron Round Table Luncheon

Presiding—D. L. Crews, Clow Corp., Coshocton, Ohio.
Subject: Twenty Years of Ductile Iron.
Speaker: K. D. Millis, International Nickel Co., New York,

12:00 Noon—Steel Round Table Luncheon

Presiding—P. J. Neff, American Steel Foundries, East Chicago, Ind.
K. C. Lowstetter, Engineering Products Div., Abex Corp., Elyria, Ohio.

12:00 Noon—Air Pollution Round Table Luncheon

Presiding—J. M. Kane, Industrial Consultant, Jeffersontown, Ky.
R. W. McIlvaine, National Dust Collector Corp., Skokie, Ill.
Subject: Clean Air for the Foundry—Facts and Figures. Consult with experts in the problems of air pollution control.

12:00 Noon—AFS Past President Luncheon

Presiding—D. L. Hall, Oklahoma Steel Castings Co., Tulsa.

2:00 PM—Air Pollution Session

Presiding—G. E. Tubich, G. E. Tubich & Associates, Grand Rapids, Mich.
J. E. DeGroot, Benfur Engineering Corp., Grand Rapids, Mich.

Subject: Economic Impact Study of Air Pollution Control on the Gray Iron Foundry Industry (Joint Study by U.S. Depts. of Commerce and Health, Education and Welfare).

Progress Report—J. M. Owens, Office of Basic Materials, U. S. Dept. of Commerce, Washington, D. C.

Some Engineering Observations from the Study—J. M. Kane, Consultant, Jeffersontown, Ky.

2:00 PM—Ductile Iron Session

Presiding—T. K. McCluhan, Union Carbide Corp., Niagara Falls,
H. W. Ruf, Grede Foundries, Inc., Milwaukee,

A Study of the Conditions Promoting Dendritic Growth in Ductile Iron—T. W. Parks, Jr., C. R. Loper, Jr., University of Wisconsin, Madison, Wis.

Effect of the Use of Chills in Heavy Section Ductile Iron Castings—D. H. Withey, C. R. Loper Jr., University of Wisconsin, Madison, Wis.

Effect of Base-Silicon and Post-Inoculation on Microstructure of Nodular Iron—W. F. Shaw, T. Watmough, IIT Research Institute, Chicago.

2:00 PM—Operating Session

Presiding—S. C. Massari, Consultant, Dundee, Ill. E. F. Koglin, FEPCO, Chicago.

Panel Discussion: Evaluation of Modern Core Making Practices.

Speakers: Shell Process—L. E. Wile, Lynchburg Foundry Co., Lynchburg, Va.
Hot Box Process—V. Rowell, Construction Aggregates Corp., Grand Haven, Mich.
Co_2 Silicate Process—E. W. O'Brien, Oklahoma Steel Castings Co., Tulsa,
Air-Set Process—D. W. McFarland, Clark Eng. & Comp. Div., Dresser Industries, Olean, N.Y.

2:00 PM—Steel Session

Presiding—W. D. Lawther, American Steel Foundries, East Chicago, Ind.
V. J. Obrig, Sawbrook Steel Castings Co., Cincinnati.

The Influence of Casting Shape and Pouring Temperature on the Feeding Distance of Low Carbon Steel—S. B. Johnson, Allen-Bradley Co., Milwaukee, Wis.; C. R. Loper, Jr., University of Wisconsin, Madison, Wis.

The Effect of Solidification Time and Nonmetallics on the Ductility of High Strength Steel Castings—P. F. Weiser, J. F. Wallace, Case Western Reserve University, Cleveland.

4:00 PM—Steel Session

Presiding—W. F. Shaw, IIT Research Institute, Chicago.
R. W. Zillman, Steel Founders' Society of America, Rocky River, Ohio.

Formation of Sulfide Inclusions in Steel Castings—T. Z. Kattamis, M. C. Flemings, Massachusetts Institute of Technology, Cambridge, Mass.

Manufacturing Castings by Electroslag Remelting Process—G. K. Bhat, Carnegie-Mellon University, Pittsburgh.

4:00 PM—Sand Session

Presiding—R. H. Olmsted, Whitehead Brothers Co., Florham Park, N.J.
R. H. Jacoby, St. Louis Coke & Foundry Supply Co., St. Louis.

Cold Box Process—Process Engineering Studies—L. B. Sahlin Ashland Chemical Co., Minneapolis,

Silicon Hardened Sodium Silicate Bonded Olivine Molding Sands—P. W. Ford, University of Washington, Seattle.

4:00 PM—Joint Gray-Ductile Iron Shop Course

Presiding—M. H. Lovett, Republic Steel Corp., Cleveland.
L. L. Clark, General Foundry & Mfg. Co., Flint, Mich.

Subject: Rapid Melting Control Techniques.

Speaker: D. E. Krause, Gray Iron Research Institute, Columbus, Ohio.

6:00 PM—AFS Alumni Dinner (AFS Alumni Only)

Presiding—C. F. Seelbach, Jr., Forest City Foundries Co., Cleveland.

Friday, May 9

9:30 AM—Ductile Iron Session

Presiding—R. J. Warrick, Ford Motor Co., Dearborn, Mich.
S. I. Karsay, Quebec Iron & Titanium Corp., Sorel, Que., Canada.

Nickel-Molybdenum Bainitic Ductile Iron—R. D. Schelleng, The International Nickel Co., Inc., Suffern, N.Y.

The Kinetics of Sulfur Transport between Slag and Molten Iron Droplets (AFS Research)—W. N. Bargeron, P. K. Trojan, R. A. Flinn, University of Michigan, Ann Arbor, Mich.

The Approach to Equilibrium and Dross Formation in Nodular Cast Iron (AFS Research)—D. R. Askeland, P. K. Trojan, University of Michigan, Ann Arbor, Mich.

9:30 AM—Sand Session

Presiding—L. E. Taylor, Wedron Silica Co., Chicago. R. L. Cleland, Consultant, Albion, Mich.

Shell Tests—Fact or Fancy? and Some Guidelines for Sand Coating—R. M. Ovestrud, R. H. Lewis, Foundry Products Div., Reichold Chemicals, Inc., Elizabeth, N.J.

Evaluation of Tests for Control of Foundry Sand Systems—A. E. Murton, Dept. of Energy, Mines & Resources, Ottawa, Ont., Canada.

Annual Report of the AFS Executive Vice-President

July 1, 1968-June 30, 1969

This report covers Society activity and is supported by the follwing separate reports and exhibits:

1. All technical aspects of Society operations by the Vice-President-Technology.
2. All financial transactions of the Society by the Vice-President-Finance.
3. Audit of AFS finances for the year ended June 30, 1969.
4. All membership activity of the Society by the Secretary.
5. Statement of publication activity year ended June 30, 1969.

Technical Communications

Modern Casting

A record of 326,700 magazines were printed during the past year reflecting an increase in circulation for the magazine which now averages 27,600 copies per month. For the first time in six years MODERN CASTING advertising revenue dropped, reflecting a current industry trend, however, it is not felt that this is permanent. Total gross advertising was down 5% from the previous year; the past year of 1968-69 stands as the second highest year on record.

Feature editorial totaled 781 pages or 45% more than any other publication in the field.

During the past year a team of consultants were retained to redesign MODERN CASTING, starting with the January 1969 issue. The new look is apparent and includes complete revision of typography, layout, format, and arrangement of the magazine, utilizing the latest publishing techniques. Comments from the advertisers and readers have been exceptionally complimentary.

The Technical Publications Evaluation Committee, appointed by the President, made a full study of all publishing activities of the Society resulting in a strong endorsement of existing operations plus recommendations for future emphasis. One leading recommendation was that the Casting Congress papers be condensed into briefer, more readable form for MODERN CASTING. It was further suggested that the Cast Metals Research Journal be considered as a vehicle for publishing some of the Casting Congress papers. Strong emphasis was given to emphasizing the practical operating editorial in MODERN CASTING.

As the success of MODERN CASTING during recent years is reviewed, it is most important to note the trend in the creative innovation and technical journalism. MODERN CASTING is creating a very desirable reputation which is becoming more widely recognized as the authority in the metalcasting field.

Cast Metals Research Journal

The past year's effort for the Journal has been excellent from the standpoint of dissemination of technical information. The new policy of condensing articles as much as 50% was put into effect this past year allowing publishing of 27 articles compared to 15 articles the previous year. Eleven of the articles are original material compared to only 2 the previous year. In addition to feature material there are 5 regular de-

partments that are part of each issue. They are: Research News, Research In Progress, Forum, Abstracts, and Laboratory Spotlight. Articles from 12 different countries were printed in fiscal 1968-69.

Circulation for the Journal dropped approximately 200 during the past year to a total of 1300. Continuing special promotion efforts are planned for 1969-70 with hope of increasing subscriptions to an estimated saturation level of between 2500 and 3000.

Experimental efforts took place last year using a microfiche insertion as an economical way of including additional pages of data and text to supplement certain articles. Analysis resulted in the fact that this idea is ahead of its time and will be temporarily discontinued. The feasibility of offering microfilmed back volumes is being studied.

The editorial policy of the Journal is constantly under scrutiny. It is the opinion and unanimous recommendation of the Editorial Board that the high level fundamental standards of the Journal should not be lowered in any way from the purpose of attracting more subscriptions.

Technical Books and Research Reports

Last year 3 technical books, 11 research reports and the Transactions were published. The Design of Sand and Permanent Mold Aluminum Castings represented a joint effort between AFS and the Non-Ferrous Founders' Society and was designed primarily for the use of designers and purchasing engineers. The major item of the year was the new addition of the "History of the Metalcasting Industry" which was revised and updated with an additional chapter to bring it current with developments of the 20th Century.

Job Description Shopbook, first in a new venture of small pocketbook series, was produced last year. It is intended that they sell at a low price and be handy to the operating man to carry around in his pocket if he so desires.

Total publications sales for the fiscal year amounted to 14,750 volumes or 1583 more than 1967-68.

Included in the past year's fiscal planning and projected for 1969-70, the following are the major publications to be produced:

Foundry Environment Control
Safety in Metalcasting (.7 pocketsize shopbooks)
Revised section of Foundry Sand Handbook
3—modern casting shop books
11—Research Reports
AFS Annual Transactions

Safety in Metalcasting will first be published as a series of shopbooks representing chapters in a slip case edition. Each chapter will have to do with safe practices in the particular operation of the foundry such as the melt shop, the core room, the sand mill, the cleaning room. . . . 7 major departments of the foundry. Proceedings of the Electric Melting Conference to be held November 18-20, 1969, will also be published in time to pass out to the registrants at the Conference. There is a possibility of an additional book concerning process and production control being published in the latter half of fiscal 1969-70.

During the past year noticeable progress has been made concerning the cold type process utilizing the IBM-MTST graphics composer. It has become evident that the process can represent considerable dollar savings in many of the various forms of communications from AFS, such as, special directories, promotion pieces, shop books and quite probably the Cast Metals Research Journal. Last year it resulted in substantially cutting costs for typesetting. The equipment is also being used for all form letters and is responsible in great part for the personal letter followthrough that is being emphasized in all Society operations.

1969 AFS Casting Congress

The 73rd AFS Casting Congress broke no records, however, the Cincinnati event could be considered highly successful in that maximum attendance occurred in all technical sessions. Record advance registration did occur due to effective utilization of the computer. The printing of the advance registration cards for all attendees also materially expedited registration at Convention Hall. It is anticipated that all future registrations for Casting Congress and Expositions will be handled in a similar manner.

The only noticeable negative reaction to the entire Congress was that Tuesday was too heavily loaded with sessions. AFS is going to have to call upon the various Groups and Divisions to assist in realigning the program and eliminate this overload on Tuesday.

The Southwestern Ohio Chapter should be recognized for the outstanding support they gave the Society in arranging and conducting local events. The publicity program was outstanding and special effort by the Chapter resulted in noticeable window dressing for the cast metals industry throughout Cincinnati during Convention Week.

1970 AFS Exposition

During the last two months of fiscal 1968-69 space sales were initiated for the 1970 Show. At the close of June 30, 1969, record application for space had occurred. At this point we can be quite confident that the Show will be larger than in 1968 and exceed the all time record of 102,250 square feet.

Training and Research Institute

Fiscal 1968-69 included 41 courses of which 17 were held in Regions. Average class attendance was down to 24.8 compared to 30.6 the previous year. A total of 1,018 students participated in the regular T&RI courses. To date 280 courses have been presented representing a total of 8128 for an average attendance since 1958 of 29 students per course.

T&RI was involved in six special programs during the year. The Casting Institute at the State University of Wisconsin at Platteville, Wisconsin, was a 4-week program designed for graduate students and operating foundrymen. It was primarily a program of teaching the teachers how to teach with the majority of instructional staff coming from industry and included 4 people from the AFS-T&RI Staff.

Secondly, a Foundry Instructors Seminar was held at Erie County Technical Institute sponsored by the school. This was a 3-evening course between 6:30 and 10:30 pm at which T&RI furnished one instructor and was involved in the development of the curriculum. The summer foundry workshop at Trenton State College in Trenton, New Jersey, received T&RI attention in development of their program and opening lectures. Fourth such program was "Focus on Foundry" held at the University of Northern Iowa which was an intensive program for 60 teachers and 20 local area foundrymen. This was a one-day event at which T&RI was directly involved in instruction and course development.

At Western Michigan University in Kalamazoo the first co-op intensive courses with universities were conducted. It was a 5-day program encompassing two regular T&RI courses. Industry personnel could attend for the full program or take it in two separate programs. The program covered ferrous metallurgy and melting. The sixth program was the Advanced Seminar on "Computer Control and Systems Engineering Applied to the Metalcasting Industry" at Case Institute, Cleveland, June 9-11, 1969.

The Apprentice Contest was highly successful, bringing in 625 total entries, of which 153 were judged in the National Contest. Twenty-one of the AFS Chapters participated in local runoff contests. A subcommittee is studying the development of a design contest which, if approved, will be directed specifically to students enrolled in formal out-of-plant educational institutions.

The two guidance films are available. The first film concerns itself with high school graduates and the second, those students who are seeking additional college education. The films are available gratis to donors, $50 each for purchase or $5 per showing. Free loan is granted to schools and there are, in addition to copies at AFS, 150 loan copies available from Northeastern University Career Information Center.

The first major text in a series for regular T&RI courses has been put into production. It is a sand technology text to be ready by late summer 1969. It is anticipated that every course in T&RI will eventually have a similar text.

Programmed Learning Courses have been held up momentarily due to problems with the publisher. However, Principles

of Physical Metallurgy for Ferrous Castings will be ready during 1969-70. It is anticipated the first one will be ready by the first half of the year and the second by spring of 1970.

Additional courses are being studied for Programmed Learning development and include: 1) Basic Sand Technology, 2) An Introduction to Metalcasting Production, 3) Melting Practice which will involve separate sections on the cupola, electric ferrous, electric nonferrous and crucible nonferrous, 4) Cleaning Room Operations, and 5) Coremaking.

T&RI personnel have been actively assisting with various outside educational activities during the period. There have been technical school conferences, teacher seminars, AFS Chapter meetings, and Regional Conferences, and a great many educational inquiries.

Summary of Computer Activities

The AFS Computer installation is just one year old and the programs as developed are providing sevices even beyond original expectations. The major program involving circulation and membership was converted to AFS hardware on August 20, 1968, when the Service Bureau contract was terminated. During the course of the year, considerable refinements have been made and the services rendered by this program precisely fit Society needs.

The other major program instituted this past year was Reader Service. This is a special service to advertising clients informing them of the inquiries generated by their advertising in MODERN CASTING. It also measures the

Breakdown of AFS Membership Juy 1, 1969

CHAPTER	RP	SUS	CO	P	AF	AS	JR	HON	SERV. LIFE	TOTAL
Birmingham District	2	5	18	112	301	8	0	8	19	473
British Columbia	0	0	11	49	23	5	2	0	1	91
Canton District	0	1	12	70	110	2	1	0	2	198
Central Illinois	0	2	6	39	234	3	25	3	2	314
Central Indiana	0	2	18	72	257	7	5	0	7	368
Central Michigan	1	1	5	72	198	15	4	4	2	302
Central New York	0	0	10	37	111	1	0	0	2	161
Central Ohio	1	1	14	68	100	4	3	4	4	199
Chesapeake	0	1	11	52	52	9	1	3	3	133
Chicago	5	9	48	194	407	18	15	9	10	715
Connecticut	0	2	11	83	45	7	0	0	1	149
Corn Belt	0	0	4	15	31	4	1	0	1	56
Detroit	2	7	20	185	458	15	14	5	5	711
Eastern Canada	0	2	16	103	129	16	2	3	1	272
Eastern New York	0	1	2	13	33	4	0	1	0	54
Metropolitan	4	5	34	141	196	15	2	9	3	409
Mexico	0	0	6	87	14	0	3	0	0	110
Michiana	0	3	19	75	214	3	1	0	7	322
Mid-South	0	0	1	27	31	0	0	1	0	60
Mo-Kan	0	0	14	50	77	8	0	0	0	149
New England	0	1	17	146	59	17	1	1	5	247
Northeastern Ohio	3	14	36	166	410	13	6	14	9	671
Northeastern Wis.	0	4	7	60	150	3	0	0	0	225
Northern California	0	0	14	104	117	9	1	0	7	252
No. Ill. & So. Wis.	0	1	8	25	54	2	1	0	2	93
Northwestern Pa.	0	0	8	54	80	0	0	1	0	143
Ontario	1	1	36	201	150	11	1	0	3	404
Oregon	0	1	5	72	37	4	0	0	1	120
Penn-York	0	0	10	11	82	1	0	0	3	107
Philadelphia	0	5	43	137	181	18	6	2	8	400
Piedmont	0	0	11	103	72	15	0	2	3	206
Pittsburgh	3	4	28	155	181	14	0	1	2	388
Quad-City	0	3	10	77	222	5	2	1	4	324
Rochester	0	1	2	25	37	2	0	0	1	68
Saginaw Valley	0	3	7	45	613	7	32	3	9	722
St. Louis District	0	4	23	49	104	7	0	1	3	191
Southern California	0	2	22	136	119	10	5	0	6	300
Southwestern Ohio	1	8	23	112	138	8	0	2	9	301
Tennessee	0	1	6	48	145	3	0	0	0	203
Texas	0	3	16	111	133	6	1	2	5	277
Timberline	0	0	8	36	70	5	1	0	0	120
Toledo	0	0	8	33	92	3	1	1	2	140
Tri-State	0	1	3	76	43	0	1	1	0	125
Twin City	0	1	16	105	106	8	4	0	1	241
Utah	0	0	4	13	35	2	1	1	1	57
Washington	0	0	11	50	35	11	5	0	0	112
Western Michigan	0	0	21	65	166	3	1	0	8	264
Western New York	2	5	11	57	244	8	70	1	7	405
Wisconsin	0	10	45	170	525	18	10	5	19	802
Total Reg. Chapters	28	115	739	3,987	7,421	357	229	89	189	13,154
Total Student Chapters					2	3	353			358
Total All Chapters	28	115	739	3,987	7,423	360	582	89	189	13,512
Foreign	0	1	15	417	5	34	1	3	5	481
Non-Chapter	0	0	0	4	3	11	2	0	0	20
Military								Mi.		5
GRAND TOTAL MONTH	28	116	754	4,408	7,431	405	585	5 92	194	14,018
GRAND TOTAL 7/10/68	22	115	752	4,401	6,912	373	877	5 95	177	13,729

editorial effectiveness of MODERN CASTING.

The Computer Department is scheduled to provide 9½ hours per day of machine time. However, the office hours of the Society are 7½. Total normal activity represents 66.4% of this time or 1,760 hours. During the past year, 890 hours or 33.6% of the total activity of 2,650 hours was overtime.

There are several factors involved when considering computer time. There is a normal scheduled maintenance of the machine which represents 2.1% or 56 hours. There is lost time of 3.2% which is down time of the equipment. This is on the low side of the scale for any such installation. This leaves an availability factor of 2,509 hours or 94.7% of time, and the loading efficiency or actual use of the computer is, at this time, 74.2% or 1,864 hours. An over view of the use time can be explained as follows:

EDP overhead total 498 hours or 26.7%. Actual production time 827 hours or 44.3% and development running time (developing programs) was 29%. Converting these hours to dollars, in-house activity cost of $40,980 compared to the comparable job being done on the outside at $75,130. The outside cost is figured on a $55 per hour charge which is again at the low end of the scale and quite frankly hourly costs on the outside for comparable hardware run to $70/hr. A direct comparison of development costs of the three

How Your Chapter Stands on Membership Totals

Chapter	7/10/68	12/1/68	1/1/69	+ or (—) (1 mo.)	Year to Date
Birmingham District	468	494	480	(14)	12
British Columbia	100	95	95	—	(5)
Canton District	184	193	194	1	10
Central Illinois	307	312	316	4	9
Central Indiana	333	334	335	1	2
Central Michigan	255	295	291	(4)	36
Central New York	133	145	152	7	19
Central Ohio	193	194	191	(3)	(2)
Chesapeake	118	123	124	1	6
Chicago	732	744	734	(10)	2
Connecticut	144	146	149	3	5
Corn Belt	48	50	50	—	2
Detroit	716	692	714	22	(2)
Eastern Canada	290	285	285	—	(5)
Eastern New York	49	52	52	—	3
Metropolitan	420	407	403	(4)	(17)
Mexico	101	108	108	—	7
Michiana	312	318	321	3	9
Mid-South	62	63	64	1	1
Mo-Kan	157	153	155	2	(2)
New England	258	253	252	(1)	(6)
Northeastern Ohio	638	653	629	(24)	(9)
Northeastern Wisconsin	190	202	204	2	14
Northern California	257	253	251	(2)	(6)
No. Ill. & So. Wis.	110	100	100	—	(10)
Northwestern Pennsylvania	145	147	149	2	4
Ontario	399	403	403	—	4
Oregon	126	119	117	(2)	(9)
Penn-York	87	101	104	3	17
Philadelphia	388	391	390	(1)	2
Piedmont	174	180	179	(1)	5
Pittsburgh	389	387	386	(1)	(3)
Quad City	306	315	312	(3)	6
Rochester	69	70	72	2	3
Saginaw Valley	505	548	582	34	77
St. Louis District	203	202	201	(1)	(2)
Southern California	307	296	294	(2)	(13)
Southwestern Ohio	296	297	298	1	2
Tennessee	220	221	219	(2)	(1)
Texas	263	269	269	—	6
Timberline	112	110	122	12	10
Toledo	147	137	142	5	(5)
Tri-State	117	123	125	2	8
Twin City	230	241	237	(4)	7
Utah	58	56	55	(1)	(3)
Washington	131	123	125	2	(5)
Western Michigan	269	263	254	(9)	(15)
Western New York	358	421	380	(41)	22
Wisconsin	866	870	865	(15)	(11)
Total Student Chapters	443	476	461	(15)	18
Foreign	516	485	485	—	(31)
Non-Chapter & Military	26	24	24	—	(2)
	13,735	13,939	13,899	(40)	164

programs new in-house compared to doing the same job on the outside is as follows:

	Man-Hrs.	In-House	Outside
Circulation System	2,760	$22,080	$41,400
Reader Service System	840	6,720	12,600
Misc. (Complete 9/1/69)	480	3,840	7,200
	4,080	$32,640	$61,200

A summary of total costs in-house vs. outside service bureau is as follows:

	In-House	Outside
Production	$24,810	$45,485
Development	48,810	90,845
	$73,620	$136,300

To give a more definitive breakdown of the two major programs done within the past year, please refer to Exhibit (A) —"Circulation" and Exhibit (B)—"Reader Service" attached to this report.

The AFS Staff of the Computer Department and the Technical Department are working closely with industry committees in an effort to develop sound programs of direct industry or plant benefit. At the moment, nothing is final . . . however on the horizon there appears to be one or two programs that could possibly be developed within the next 18-24 months. In the meantime, AFS is proceeding diligently to develop the Document Retrieval Program which is the next major endeavor following the completion of a third program involving the extraneous lists and EDP functions in-house. This should be completed by September 1 at the latest.

Exhibit (C) relates time and costs by departments.

Chapter Officers Conference

Ninety-one delegates from all 49 Chapters attended the 1969 COC. This is a record attendance and 100% of the chapters were represented. In addition to the Chapter delegates, 7 AFS Directors were present, including the Vice-President. The meeting was chairmanned by President O'Meara and the entire function was conducted at Pangborn Memorial-T&RI with housing arranged at a nearby hotel.

International Affairs

The 1969 International Foundry Congress was held in Kyoto, Japan, October 6-11, and was attended by Past President Norman J. Dunbeck and AFS Vice-President—Technology Paul R. Gouwens as officials.

The 1970 International meeting will be held in Belgrade, Yugoslavia, September 7-12, and the official delegates will be AFS President John O'Meara and AFS Vice-President—Technology Paul R. Gouwens. The Official Exchange Paper will be offered by A. Dorfmueller and Dr. Robert P. Schafer of Ashland Chemical Company. AFS Immediate Past President Bernard Ames continues to serve on the Executive of the International Committee. Discussion has begun with authorities in Philadelphia and committees are being appointed for the International Meeting in 1972 in Philadelphia.

General Administration

AFS Staff now numbers 36 full time employees plus 2 part-time. As of March 1, 1969, AFS filled the position of Assistant Director of Safety, Hygiene and Air Pollution Control by retaining Mr. William Huelsen. The third man in the Technical Department is still being sought. T&RI succeeded in filling their position with Mr. Clarence Quaife as of July 1, 1969.

No further developments or changes have been made to the AFS Headquarters Building nor any plans anticipated during fiscal 1969-70. The rehabilitation program started 5 years ago still lacks between 5 and 7% of being completed.

Respectfully submitted,
ASHLEY B. SINNETT
Executive Vice-President

Annual Report of the AFS Secretary

July 1, 1968-June 30, 1969

Society membership reached 14,018 at the close of fiscal 1968-69 in its sixth consecutive year of membership growth, and added a net gain of 289 members. Membership campaigns during the year were credited with producing the highest volume of new corporate, 77, and individual members, 2,792, in AFS history. A substantial number of drops for nonpayment of dues, however, and low percentage of recovery reduced net gains as illustrated in the following summary:

Total active membership as of July 1, 1968			13,729
Members Added 7/1/68-6/30/69		2,792	
Members Dropped 7/1/68-6/30/69			
Resignations	247		
Deaths	55		
Delinquents Dropped	2,704		
Less Reinstated	503	2,201	2,503
Total Active Memberships as of June 30, 1969			289
			14,018

A review of membership activity since 1964-65 illustrates the effect of drops and percentage reinstatements of drops on net gains:

	News	Drops	Reinstate/%	Resign/ Deaths	Net Gain
1968-69	2,792	(2,704)	503/19.6%	(302)	289
1967-68	2,201	(2,256)	616/27.3%	(305)	256
1966-67	2,200	(1,830)	440/24.4%	(335)	462
1965-66	2,607	(1,616)	505/31.3%	(284)	1,212
1964-65	1,833	(1,604)	748/46.6%	(236)	741

Analysis of net gains by membership classification indicates that Junior Memberships had a disproportionate effect on 1968-69 net gains. (In the Junior class, only 87 of the 292 net loss occurred in AFS Student Chapters.) A 5-year summary of growth by classification is as follows:

Net Gain (Loss) for Year by Class

	RP	SUS	CO	PERS	AFF	AS	JR
68-69	6	1	2	7	519	32	(292)
67-68	(1)	(5)	—	167	67	11	(19)
66-67	1	6	28	147	325	12	(99)
65-66	1	3	32	274	659	31	94
64-65	3	1	(23)	164	458	(1)	126

New and upgraded corporate memberships reflected the impetus of AFS Director contacts as well as the special efforts of chapters in their Sweepstakes Campaign. A total of 6 new Research Patrons, 13 Sustaining, and 58 Company Members were entered during te fiscal year. The 77 new corporate members compared to 54 last year and 47 in 1966-67. A higher volume of corporate drops, anticipated with the corporate dues increase, reduced this growth as noted in the Net Gain Analysis by class. It is significant to note in the attached listing of corporate drops that the majority have nominal individual participation.

In summary, special campaigns to stimulate both new corporate and individual members produced marked increases over 1967-68. However, even though Junior member losses had a disproportionate effect in 1968-69, dropped mem-

ber retention remains the overall key factor in achieving growth of 1,000 or more members in 1969-70.

The 1969-70 Membership Campaign is summarized in an attached outline. The corporate membership program will be separately reported by the Board Management-Membership Committee, including a possible committee recommendation concerning the dues rebate for Research Patron Members.

This year's campaign will include a considerably expanded development of both corporate and individual prospects for membership, and the added involvement of AFS Alumni, Past Chapter Chairmen, and others to intensify the volume and effect of personal contact solicitations. The enhusiasm generated in many chapters last year has merited the continuation of the Chapter Sweepstakes Campaign, including bonus points for corporate gains and competition in four chapter groups by membership size.

Coupled with a continued rise in casting production, it is anticipated that the 1969-70 Membership Campaign will reach the net 1,000-member increase requested by the President. Emphasis on a separate, consistent chapter effort to regain dropped members will be made to maximize net gains from the expected high volume of new members.

In other chapter activity, the Society's Wichita Section has petitioned for full chapter status in 1969-70. Also, two new sections are currently being developed: the "Prairie" Section of British Columbia Chapter in the Alberta, Manitoba and Saskatchewan Provinces of Canada, and the "Hawkeye" Section of the Quad City Chapter in the vicinity of Waterloo, Iowa. Corporate support and individual participation indicate exceptional chapter activity in these three areas.

Respectfully Submitted,
Walter A. Schaw
Secretary

Annual Report of AFS Vice-President-Finance

for fiscal Year Ended June 30, 1969

The following documents are a part of this finance report:

1) Annual Audit Report, June 30, 1969
2) Comparative Statement of Itemized Income and Expense for fiscal year 1965-66 through 1968-69
3) Recommended Budgets of Itemized Income and Expense for 1969-70 (Included on Comparative Statement).

Summary Analysis

Assets	1969	1968
Cash & Treasury Bills	$ 31,397.	$117,809.
Accounts Receivable	45,509.	43,373.
Publications Inventory	125,834.	117,308.
Fixed Assets (net)	615,052.	666,452.
Deferred Charges	27,320.	10,801.
Total	$845,112.	$955,743.
Liabilities & Principal		
Current Liabilities	$142,662.	$ 71,111.
Fund Principal	702,450.	884,632.
	$845,112.	$955,743.

In addition to the above, separate cash funds are maintained for Investment Advisory Account (Harris Trust and Savings Bank, Chicago), Gold Medal Awards, and Howard F. Taylor Award. A full set of accounts are maintained for AFS-T&RI, on the same fiscal year basis as AFS.

Publications Inventory has increased due to new books published during the fiscal year. Minimum quantities are printed with constant review of all necessary editorial and/or price revision.

Deferred obligations have increased due to 1970 Exposition sales effort begun during 1968-69 fiscal year.

Operations Summary
(reference pp B-E Annual Audit)

	1969		1968	1967
	Budget	Actual	Actual	Actual
Income Activities (net)	$393,400.	$319,067.	$355,626.	$369,742.
Expense Activities (net)	366,200.	402,944.	306,475.	381,161.
Fiscal Income (Expense)	$ 27,200.	$(83,877.)	$ 49,151.	$(11,419.)
Exposition Revenue (Expense)	—	(2,060.)	336,326.	(3,935.)
T&RI Res. Contributions	(100,000.)	(100,000.)	(100,000.)	(100,000.)
Special Projects	—	3,254.	(35,218.)	—
	$(72,800.)	$(182,683.)	$250,259.	$(115,355.)

Budgeted income which Staff Officers believed necessary to carry expanded activity requiring greater service cost including computer and secondary staff was not realized. The Finance Committee is placing its major effort in this direction. Stronger membership financial support must be forthcoming if technical growth is to be maintained. Supplementary income subject to business cycles cannot be relied upon to support the continuing basic across-the-industry technical committee, publication, and research investment.

Initiation of revisions in existing programs as well as carrying heavy future program expense (i.e., computer) is damaging to fiscal policy and puts restraint on Staff when variable income items do not meet forecast. Your Finance Committee is not lowering its goals for AFS because of lack of supplemental income. They are going to be realistic and write off the heavy computer burden cost in the 1969-70 fiscal year as fully paid. The depreciation burden is unrealistic until such time as the departments burdened are receiving their cost share of service. With a enlarged computer staff, we look forward to few delays.

As the Research Patron membership grows, research contributions to AFS-T&RI are constantly increasing upwards from the basic $100,000 annually . . . $116,450 in 1968-69 versus $113,200 in 1967-68.

Special Projects expenses include:

Reduction of Legal Fee Reserve	$15,000.
Computer Initiation Balance (1967/8)	$(2,824.)
Document Retrieval, inc. Computer burden	$(8,922.)

Budgets 1969-70

AFS 1969-70 Budgets reflect a growing confidence by the Finance Committee that the industry will increasingly recognize and utilize AFS.

We believe forecasted income possible to attain and expense necessary to gain that income. The budget will provide the service required now and assure a consistent professional staff to encourage the industry in continual technological improvement . . . as well as the metalcasting industry supplier into providing machines and products.

Conclusion

The Finance Committee is showing great strength in insisting on the steady growth of AFS technical competence while backing the Staff 100% in seeking the fixed income necessary to assure stability through variable fiscal periods.

EDW. R. MAY
Vice-President—Finance

Annual Report Of AFS Vice-President-Technology

July 1, 1968 to June 30, 1969

The major activities reported include the programming function, the furnishing of technical information from library resources, the development and exchange of information within the technical committees, the accumulation of new knowledge through AFS-T&RI sponsored research and the furnishing of technical personnel to give techical guidance in production problems and to assist the industry in its safety, hygiene and air pollution problems.

1969 Casting Congress

The 73rd AFS Casting Congress was convened in Cincinnati, Ohio, May 5-9, 1969, and brought together outstanding technical experts and personnel from the cast metals producers on this continent and from abroad. There were a total of 57 technical sessions, including 8 luncheons where round table presentations dealt with topics of current technical interest, and three shop courses. The technical sessions are designed to present the latest accomplishments in a diversity of areas of deep concern to the cast metals industry while the shop courses attempt to teach current practices to those who are not broadly based in foundry procedures.

This year the operating sessions bridged the gap between research and application by presenting a series of papers on the evaluation of modern coremaking practices. The technical program was very well received by the 1,797 registrants who comprised the active audience.

The participation by the audience was a commendation to the 192 speakers and authors who presented the information contained in 80 technical papers. Incidentally, of these 80, 13 represented AFS sponsored research reports, while the growing popularity of panel discussions was attested to by the presence of an additional 8 sessions having a round table format.

Major features of the Casting Congress included the Charles Edgar Hoyt Lecture this year presented by J. W. Meier of the Canadian Department of Energy, Mines and Resources on the subject, "Nonferrous Metals—Past and Future". The perspective gained by this lecture should give encouragment and stimulus to accelerated progress. The 3rd World Lecture was most ably presented by I. C. H. Hughes of the British Cast Iron Research Association, to a "standing room" only audience, on the subject, "The Role of Gases in the Structure of Cast Irons".

The Silver Anniversary Paper of the Molding Methods & Materials Group was authored by E. C. Zirzow, Werner G. Smith, Inc. and referred to his work of a quarter century ago, which still is applicable, on "Seacoal and Fuel Oil in Molding Sands". The Molding Methods & Materials Group also heard at the Sand Dinner, H. G. Levelink of Gieterijcentrum TNO, Delft, Netherlands, speaking on "Control of the Molding Sand System".

Future Congress Plans

The Casting Congress and Exposition for 1970 will be held April 6-10 in Cleveland, Ohio. This earlier scheduling of the Congress and Exposition has caused the Program and Papers Committees of the different Divisions to initiate their plans for the program at an early date. The 1970 Hoyt Lecturer will be Warren Jeffery of McWane Cast Iron Pipe Co., while the topic and national origin of the 4th World Lecturer still remains to be determined. A rescheduling of the aborted 1969 plans is being attempted in cooperation with Association Technique de Fonderie of France.

1969 First AFS Electric Ironmelting Conference

For the first time a new form of technical programming by AFS will be accomplished in 1969 with the inauguration of what is planned to be a continuing series of technical forums on specific topics. This year, November 18-20, at the Kellogg Center for Continuing Education of Michigan State University, East Lansing, Michigan, the AFS Electric Ironmelting Conference will convene.

This two-day technical forum, followed by one day of plant visitations to a number of foundries in the eastern Michigan area, is the culmination of the plans by three technical committees—the Induction Melting Committee of the Related Interests Division, the Melting Methods Committee of the Gray Iron Division, and the Melting Methods Committee of the Related Interests Division. The forum is in response to an obvious need to publicly discuss the many facets of electric ironmelting, and it is designed to be especially responsive to the needs of producers of the high carbon metals who either have acquired electric melting facilities or are in the process of making their decisions relative to such acquisitions.

Published proceedings of the Conference will be available after completion of the Conference while preprints will be furnished to all those who register for attendance. This is an intensive seminar and will be conducive to maximum interaction between a closed group, utilizing such techniques as very brief formal presentations followed by liberal discussion periods and off-the-cuff meetings in the evenings. Registration is limited to approximately 375 and a fee of $150 is required to adequately underwrite all of the costs related to this activity. At the conclusion of the fiscal year, sufficient advance registration had been pledged to meet our projected out-of-pocket expenses.

The avid reception of these plans testifies to the need for such a forum and is very promising for any future efforts of this kind. Topics for future conferences have not yet been formally established; however, tentative topics related to automatic and high pressure molding may be selected for 1970. Repetition of the electric ironmelting theme will probably follow on a cycle of approximately three years.

International Committee of Foundry Technical Associations

Your Society has a major role in the International Foundry Congresses and the activities of the technical commissions sponsored by the CIATF. AFS Past President Ames is a member of the Executive of the CIATF and two official delegates represent our interests. Each year a paper sponsored by AFS as the Official Exchange Paper and also a paper as a Technical Communication, when permitted by the sponsoring nation, are furnished by AFS.

The official delegates to the 35th International Foundry Congress held in Kyoto, Japan, October 6-12, 1968, were N. J. Dunbeck and P. R. Gouwens. A large delegation from North America was in attendance at this International meeting. The Official Exchange Paper from AFS was offered by Prof. Carl R. Loper, Jr. on the subject, "Processing and Control of Ductile Cast Iron". The Technical Communication was authored by Charles F. Knight on the subject, "Integrated Operation Control System". It was the consensus of the 58 members participating in the AFS tour that the possibility of viewing the technical progress of dynamic Japan was well worth the effort of attending.

The 36th International Foundry Congress will be held in Belgrade, Yugoslavia September 7 to 14, 1969, in conjunction with a Casting Exposition. The Official Exchange Paper from AFS will be presented by A. Dorfmueller, Jr., co-authored by R. Schafer, both of Ashland Chemical Co., on the topic, "Cold Box Process—Research to Reality". The paper originally scheduled as the Official Exchange Paper was withdrawn and the above paper by Dorfmueller and Schafer was changed from the Technical Communication to the Official Exchange Paper status. In view of limited time available no Technical Communication was obtained. The official delegates to the Belgrade meeting will be AFS President J. O'Meara and the Vice President—Technology, P. R. Gouwens. A total of 66 representatives of AFS are currently scheduled for the AFS tour.

Future plans include annual meetings scheduled for Sep-

tember 20-25, 1970 in Brighton, England; September 20-24, 1971 in Dusseldorf, Germany; May 8-12, 1972 in Philadelphia, U.S.A.; 1973 in Moscow, U.S.S.R.; 1974 in Belgium and 1975 in Portugal.

Technical Committee Activities

There are over 600 men so committed and of these approximately 25 percent represent the supplier industry. All committees are under the aegis of the Technical Council composed of 13 representatives who are also serving in the important posts of leadership for the different Groups and specialized activities. The AFS President is exofficio a member of the Technical Council and adequately provides control and liaison between the Board of Directors and the technical activities. Of the 94 committees within this technical committee structure, all but 14 met informally or actually at least once during the past fiscal year.

Each year the Technical Council and the Vice-President—Technology have the responsibility to appraise individual committee activities and suggest alterations or eliminate a committee if it is not functioning or its usefulness has been exhausted. The severest scrutiny from the Technical Council has been turned on itself and, recognizing that it is not functioning to meet its obligation as a governing and policy-making group, it is attempting to rectify the matter by convening at least two meetings per year and following a method of reporting that will be more formalized, thus permitting time for adequate discussion of matters related to the important future development of the Society technical affairs and the resolution of problems facing the different committees under it.

A Cast Metals Handbook Committee is being formulated. The task of this committee will be to establish policy and organize the entire effort of the industry's technology for the preparation of a comprehensive and much needed revised Cast Metals Handbook.

The Malleable Iron Division has formulated a Sand Systems Control Committee with the stated goal of developing information relating casting defects and the frequency of their occurrence to the physical and chemical properties of the molding sand.

The Related Interests Division has reactivated the Welding Committee under the chairmanship of W. Truckenmiller. Its primary function will be to collate existing information in this rapidly changing technical area and also encourage research and programming activity. The Refractories Committee has been downgraded to a standby condition and the entire membership deleted until future decisions indicate a revived need.

The Molding Methods & Materials Group, working with a very large committee membership in the Cured Sand Committee, has split off three subcommittees to deal with the different techniques for curing sand and has reconstituted the Research Committee to also function as research monitor.

The Gray and Ductile Iron Divisions petitioned the Technical Council for merger of the Program & Papers Committees of each Division. The Technical Council judged that this request could be met by establishing informal channels of communication without the necessity of organic merger at this time. Tentatively, plans have been put forth for establishing a committee on Ferrous Permanent Mold & Die Casting and another committee on Slurry Systems for the Molding Methods & Materials Group. No specific action has been taken yet at this time.

The Steel Division committee activities remain at a comparatively low level, and efforts to rejuvenate the Division are continuing. A new committee, Field Test and Development Committee, has been formed with the objective of translating laboratory research into field evaluation with the ultimate purpose of converting research expenditures to profitable return for the industry.

The Research Board controls all expenditures of moneys for research and, since the money comes through the T&RI treasury by donation of the AFS Board of Directors and also from other sources, the position of the Research Board as a part of AFS has been questioned. For this reason the Research Board has been formulated as a part of the T&RI structure with responsibility to the T&RI Trustees, but until rules and bylaws can be amended, it is also constituted under the AFS.

After the bylaw changes have been consummated, it will exist solely under the T&RI Trustees. Reporting, however, will be made to both bodies so that the Board of Directors will also be fully informed of the progress made through our research expenditures.

Information Center Services

The Information Service activities of AFS attempt to assist the membership by directly providing technical information or pointing toward information resources that would be of value to industry in the solution of its immediate and future problems. The need for such help has spawned different forms of response from the AFS library facility.

Literature Searches and Document Retrieval. Specific phone or letter requests for published information comprise the main form of information inquiry and Table I shows the number of firms and/or number of times firms requested information from the AFS Technical Information Center since July of last year. The 711 companies and people have made 2,600 requests for information. These requests have been answered by photocopying 17,786 pages.

AFS Current Awareness Service. In the 1967-68 fiscal year this service was initiated on a subscription basis of $100 per year and comprised semi-monthly issuance of approximately 45 informative abstracts from the published English language literature. From July 1968 through June 1969 a total of 1,080 metal casting and related articles were abstracted in-depth on 5 x 8 abstract cards. Copies of the cards were sent to 193 subscribers to the service during 1968. In 1969 a peak of 198 subscribers was attained, and on resubscription the present total is 198, including 15 complimentaries for student chapters.

In December 1968 a 95 page AFS Current Awareness Catalog was prepared containing listings and cross references to all of the 1,080 articles abstracted. A free copy of the catalog was sent to each subscriber as part of his subscription. Copies of the catalog are available to non-subscribers at $25 each.

Microfilm System Installed. Late in 1968 a microfilm system was designed and installed. The system consists of a microfilm camera and a microfilm reader and printer for making photocopies. To date 2,500 pages of current documents have been microfilmed to more quickly retrieve and photocopy the numerous original articles requested.

Table I

Month	No. Companies	No. Articles	No. Pages	Income
1968				
July	61	140	1,233	$330.75
Aug.	98	300	2,051	556.35
Sept.	58	190	1,362	346.75
Oct.	60	220	1,475	370.40
Nov.	44	239	1,207	320.25
Dec.	43	180	1,049	281.75
1969				
Jan.	73	249	1,599	385.50
Feb.	46	135	983	259.75
Mar.	48	145	1,022	273.75
April	37	177	1,052	280.75
May	57	219	1,172	312.00
June	86	406	3,581	561.25
	711	2,600	17,786	$4,279.25

Safety, Hygiene & Air Pollution Activities

The mounting interest in pollution of our environment and improvements of the in-plant health and safety factors leads to a continuing escalation of the need for the services of the personnel in the SH&AP Department. The service offered consists of technical assistance in procedural approaches

when dealing with government officials, engineering services at the plant site related to external and internal problems, and educational activities through communications such as those achieved at the Chapter meetings, Casting Congresses, T&RI courses, and writing in MODERN CASTING.

One aspect of the activity centers around the relationship with the Public Health Service's National Air Pollution Control Center. This organization has initiated a research project of great importance to our industry and has been most receptive to formal cooperation from AFS. An official liaison committee is being formulated to work with the research contractor and the personnel of NAPC.

The normal mail and telephone inquiries concerning all matters dealing with SH&AP were answered. These inquiries are handled promptly and thoroughly. Fifteen in the past six months have resulted in on-the-job consultations and in-depth surveys at member company plants.

AFS-T&RI Research Activities

The research activities for fiscal 1968-69 are broken down into 14 separate contracts. During the time period four projects have been terminated and two new projects initiated. Approval for extensions and additional funding was given for ten projects. During this fiscal year $2,000 in excess of total available funds were committed. The total money available includes for the first time in 1968-69 the Research Patrons' $600 part of their contribution from the 1965-66 fiscal year (3 years retroactive) plus the $100,000 of new funds from AFS and a contribution by International Copper Research Association in the amount of $7,067 for a jointly-funded project at the University of Wisconsin. Expenditures are listed on a commitments rather than an accrual basis since the work at universities frequently extends well beyond the year the contract initiated. Established policy permits the carry-over of uncommitted funds to subsequent years.

The Research Board met four times during the year. Special effort is being devoted to long-range planning for research. This is a staff function and is aided by the retention of C. Sims with costs derived from the research budget. An overall appraisal of research indicates that the Research Board has done an outstanding job in wisely selecting the projects and are now seeking ways to increase the value to industry.

General Activities

This year has seen an increase of many activities designed to be of service to the total membership. The formal assignments of the four senior staff members in the Technical Department included 44 speaking or lecturing assignments before Chapters, Regional meetings or Training & Research Institute courses. A few of these assignments included submission of technical papers for the AFS Congress or the activities of other societies. Each month two editorial columns are prepared by the Technical Department for MODERN CASTING.

Contributions to MODERN CASTING are made in the form of news or technical articles, and, the "New Technology" section of MODERN CASTING is derived from the papers presented before the Casting Congress.

Close liaison is maintained with the other trade associations and technical societies involved with the cast metals industry, as well as with those which have a related interest, such as general metallurgy, engineering and nondestructive testing. It is policy to participate in the professional societies where the image of cast metals is enhanced by involvement of the staff members. Furthermore, there is active involvement in committee activities instigated by the government agencies.

Respectfully submitted,
PAUL R. GOUWENS
Vice-President—Technology

AFS—T&RI RESEARCH SUMMARY

	FISCAL YEAR			
Reserve Fund	1966-67	1967-68	1968-69	1969-70
Research Patron Contributions	$ 13,800.	$ 13,200.	$ 16,450.	
Transferred to Income			13,200.	
Accumulated Reserve	$ 27,000.	$ 40,200.	$ 43,450.	
Income				
Uncommitted Balance, Prior Year	$ 5,554.	$(10,281.)	$ 20,899.	
Board Transfer from AFS to T&RI	$100,000.	$100,000.	$100,000.	
Transferred from Reserve Board			$ 13,200.	
Other	6,215.		$ 7,067.	
Total Available	$111,769.	$ 89,719.	$141,166.	

Commitments:

Project	Title	Agency	Cost			
9-65-66	Permanent Mold Casting of Iron	CWRU	$	$ 14,500.	$ 14,170.	$
2-66-67	Heavy Section Copper Alloys	U of W	12,430.		14,134.	
3-66-67	Heavy Section High Carbon Ferrous	U of W	14,630.		14,630.	13,860.
4-66-67	Utilization of Foundry Wastes	IITRI	15,000.		5,000.	
5-66-67	Effect of Seacoal on Transformation Zone	PRF	6,390.			
6-66-67	Mechanism of Hot Tearing	MIT	20,800.	5,000.	15,814.	18,000.
1-67-68	Condensation Zones in Sand	PSU		2,400.	T&R	
2-67-68	Surface Defects in Iron	U of M		15,120.	14,600.	
3-67-68	Heat Transfer Study Using Computer	U of M		9,800.	10,000.**	
4-67-68	Oxygen Content and Its Eff. on Solid.	U of W		5,500.	4,500.	5-10,000.*
5-67-68	Sulfur and Carbon Control in D.I.	U of M		7,500.	6,000.	
7-67-68	Thermo. & Kinetics of Nitrogen in C.I.	U of M		6,000.	18,018.	
1-68-69	Role of Trace Elements in High Carbon Iron	CWRU			16,000.	
2-68-69	Water Explosion Phenomena, Prop. A, B, & C	TNO			10,000.	
	Long Range Planning				200.	
Total Committed			$122,050.	$ 68,820.	$143,166.	$
Uncommitted Balance (Excess)			$ (10,281.)	$ 20,899.	$ (2,000.)	$

T & R = Terminated and reported.
? = Bid probable but price unknown.
* = Tentative approval 5/27/69.
** = Negotiable.

Minutes

First Meeting of AFS Board of Directors 1968-69

Sheraton-Cleveland Hotel, Cleveland—May 4, 1968

Roll Call: Presiding, B. N. Ames, President
Vice-President J. O'Meara

Directors (1966-1969)

A. W. Anderson
G. P. Antonic
M. E. Ginty
L. W. Greenslade
W. O. Larson, Jr.
J. O. Ochsner
J. L. Payne
M. Reading
C. F. Seelbach, Jr.
E. J. Texler

Directors (1967-1970)

J. W. Beckham
F. Coghlin, Jr.
J. E. De Groot
J. B. Essex
E. H. Hill
N. H. Mingledorff
L. Winings

Directors (1968-1971)

S. C. Clow
C. Locke
W. L. Mackey
K. D. Millis
F. S. Ryan
P. S. Savage, Jr.
J. Toth

Staff Officers: A. B. Sinnett, Executive Vice-President
R. P. Gouwens, Vice-President—Technology
E. R. May, Vice-President—Finance

A quorum having been established, President Ames called to order the first meeting of the 1968-69 Board of Directors and invited all outgoing Directors to remain and paticipate in the discussions.

Election of Regional Vice-Presidents

The President announced that the Regional Vice-Presidents are picked from the senior Directors on a round-robin basis, enabling each Director during his term of office to serve for at least one year as Regional Vice-President. Recommended for appointment and election by the Board are the following Directors for Regional Vice-Presidents:

Region 1—L. W. Greenslade
Region 2—J. O. Ochsner
Region 3—W. O. Larson, Jr.
Region 4—J. B. Essex
Region 5—A. W. Anderson
Region 7—M. E. Ginty
Region 6—J. W. Beckham

On motion duly made, seconded and carried, the Regional Vice-Presidents for 1968-69 were elected as recommended.

Formation of Executive and Finance Committees

The President, in accordance with the Bylaws, announced the Executive Committee as comprising the President, Vice-President, Immediate Past President and all elected Regional Vice-Presidents He further stated that the Finance Committee comprises the President, Vice-President, Immediate Past President, Executive Vice-President, Vice-President—Finance and Vice-President—Techology.

Appointment of Board Committees

President Ames stated that, as empowered by the Bylaws, it as his duty to appoint Board and other official Committees for the fiscal year 1968-69. On motion duly made, seconded and carried, appointment of the following bodies was approved:

Executive Committee

Chairman, Pres. B. N. Ames
Vice-Pres. J. O'Meara
Past Pres. C. F. Seelbach, Jr.
R.V.P. L. W. Greenslade
R.V.P. J. O. Ochsner
R.V.P. W. O. Larson, Jr.
R.V.P. J. B. Essex
R.V.P. A. W. Anderson
R.V.P. J. W. Beckham
R.V.P. M. E. Ginty

Finance Committee

Chairman, Pres. B. N. Ames
Vice-Pres. J. O'Meara
Past Pres. C. F. Seelbach, Jr.
Exec. V.P. A. B. Sinnett
V.P.-Finance E. R. May
V.P.-Technology P. R. Gouwens

Chapter Contacts Committee

Chairman,
Vice-Pres, J. O'Meara
Exec. Vice-Pres. A. B. Sinnett
(All Regional Vice-Presidents)

Retirement Fund Trustees

Chairman,
R. W. Griswold (exp. 1969)
C. F. Seelbach, Jr. (exp. 1969)
T. T. Lloyd (exp. 1970)
L. J. Woehlke (exp. 1971)
E. H. King (exp. 1972)

AFS Nominating Committee

Chairman, Past Pres. D. L. Hall
Past Pres. C. F. Seelbach, Jr.
(Six others selected from lists to be submitted by Chapters)

Board Nominating Committee

Vice-Pres.
J. OMeara, Chairman
(Two to be appointed)

Management-Membership Committee

Chairman, J. L. Payne
(All Regional Vice-Presidents)

Honorary Lecture Committee

Chairman, A. W. Bardeen
T. E. Barlow
C. W. Briggs
R. A. Carlson
M. C. Flemings
W. E. Sicha

N.C.C. Representatives

Pres. B. N. Ames
Vice-Pres. J. O'Meara
Exec. V.P. A. B. Sinnett

F.E.F. Trustees

J. L. Payne (1967-1969)
J. E. De Groot (1968-1970)

Training and Research Institute Trustees

Chairman W. H. Buell (exp. 1969)
B. N. Ames (exp. 1970)
J. R. Bodine (exp. 1971)
J. B. Caine (exp. 1970)
H. C. Grant (exp. 1970)
C. A. Johnson (exp. 1969)
W. W. Levi (exp. 1971)
J. O'Meara (exp. 1971)
C. A. Sanders (exp. 1972)
C. F. Seelbach, Jr. (exp. 1969)
E. F. Tibbetts (exp. 1972)

AFS International Representatives

Chairman, B. N. Ames
Exec. V.P. A. B. Sinnett
Vice-Pres.
Technology, P. R. Gouwens

Official AFS Delegates to 1968 International Foundry Congress

The Official Delegates to the 1968 International Foundry Congress in Kyoto, Japan, Oct. 6-11, 38, in addition to President Ames who is a new member of the International Executive, will be Past Pres. Norman J. Dunbeck and Vice-President—Technology Paul R. Gouwens.

Organization for Chapter Contacts

President Ames urged close contact with Chapters by all Directors. It was stated that this is a most important activity of the Society in that the President and Vice-President are unable to make all necessary contacts due to the large number of Society Chapters and various related functions with sister societies and allied organizations. In a growing Society it is increasingly important that the proper liaison be continued between the Directorship and the grass roots membership. All were urged to make their contacts as soon as possible with their respective Chapters, reporting their activities to the Chairman of the Chapter Contacts Committee, Vice-President J. O'Meara.

The following schedule of Chapter Contacts was presented and approved:

Region 1

(Regional Vice-President L. W. Greenslade—President B. N. Ames, Directors C. Locke and K. Millis)

Chapter Group A—

Connecticut	—L. W. Greenslade
Metropolitan	—B. N. Ames, Pres.
	—K. D. Millis
New England	—L. W. Greenslade
Mass. Inst. Tech.	—L. W. Greenslade
Wentworth Inst.	—L. W. Greenslade

Chapter Group B—

Chesapeake	—C. Locke
Philadelphia	—C. Locke

Region 2

(Regional Vice-President J. O. Ochsner—Directors M. Reading and P. S. Savage, Jr.)

Chapter Group C—

Central New York	—J. O. Ochsner
Eastern New York	—J. O. Ochsner
Penn-York	—J. O. Ochsner
Rochester	—J. O. Ochsner

Chapter Group D—

Eastern Canada	—M. Reading
Ontario	—M. Reading

Chapter Group E—

N.W. Pennsylvania	—P. S. Savage, Jr.
Pittsburgh	—P. S. Savage, Jr.
Western New York	—P. S. Savage, Jr.
Penn State Univ.	—P. S. Savage, Jr.

Region 3

(Regional Vice-President W. O. Larson, Jr.—Directors S. C. Clow, C. F. Seelbach, Jr., E. J. Texler)

Chapter Group F—

Canton District	—E. J. Texler
Northeastern Ohio	—W. O. Larson, Jr.
	—C. F. Seelbach, Jr.
	—E. J. Texler

Chapter Group G—

Central Ohio	—S. C. Clow
Southwestern Ohio	—S. C. Clow
Toledo	—E. J. Texler

Region 4

(Regional Vice-President J. B. Essex—Directors F. Coghlin, J. E. De Groot, J. Toth)

Chapter Group H—

Detroit	—J. Toth
Univ. of Michigan	—J. Toth

Chapter Group I—

Saginaw Valley	—J. E. De Groot
Western Michigan	—J. E. De Groot
General Motors Inst.	—J. E. De Groot
Mich. State Univ.	—F. Coghlin, Jr.

Chapter Group J—

Central Indiana	—J. B. Essex
Central Michigan	—F. Coghlin, Jr.
Michiana	—J. B. Essex
Western Mich. Univ.	—F. Coghlin, Jr.

Region 5

(Regional Vice-President A. W. Anderson—Directors G. P. Antonic, F. S. Ryan, L. Winings)

Chapter Group K—

Central Illinois	—L. Winings
Chicago	—A. W. Anderson
Univ. of Ill.	—L. Winings

Chapter Group L—

Wisconsin	—G. P. Antonic
Univ. of Wis.	—G. P. Antonic

Chapter Group M—

Northeastern Wis.	—G. P. Antonic
No. Ill.-So. Wis.	—F. S. Ryan
Quad City	—A. W. Anderson
Twin City	—F. S. Ryan

Region 6

(Regional Vice-President J. W. Beckham—Directors E. H. Hill, N. H. Mingledorff, J. L. Payne, Vice-President J. O'Meara)

Chapter Group N—

Corn Belt	—E. H. Hill
Mid-South	—J. L. Payne
St. Louis Dist.	—J. O'Meara
Timberline	—E. H. Hill
Univ. of Mo.	—J. O'Meara

Chapter Group O—

Birmingham Dist.	—N. H. Mingledorff
Piedmont	—N. H. Mingledorff
Tennessee	—J. L. Payne
Tenn. Poly. Inst.	—J. L. Payne
Univ. of Ala.	—N. H. Mingledorff

Chapter Group P—

Mexico	—J. W. Beckham
Mo-Kan	—E. H. Hill
Texas	—J. W. Beckham
Tri-State	—J. W. Beckham
Prairie View A & M	—J. W. Beckham

Region 7

(Regional Vice-President M. E. Ginty—Director W. L. Mackey)

Chapter Group Q—

Northern Calif.	—M. E. Ginty
Southern Calif.	—M. E. Ginty
Utah	—M. E. Ginty
Calif. Poly. Inst.	—M. E. Ginty

Chapter Group R—

British Columbia	—W. L. Mackey
Oregon	—W. L. Mackey
Washington	—W. L. Mackey
Oregon State Univ.	—W. L. Mackey

The President reminded all Directors and in particular the new Directors that the Chapter Officers Conference will be held June 6-7 at Pangborn Memorial in Des Plaines. He stated for all the new Directors that it was one of their obligations to attend this Conference and particularly the Board Orientation Meeting which will be held Thursday afternoon during the Conference.

A schedule of the Regional Administration Meetings was reviewed and all Directors urged to attend.

Announcement of Official AFS Meetings 1968-69

The President referred the Directors to the following

Official Meetings of the Society:

June 6-7 —Chapter Officers Conference, Des Plaines
June 20 —Finance Committee, Des Plaines
June 21 —T&RI Trustees Annual Meeting, Des Plaines
July 25-26—AFS Annual Board Meeting, Des Plaines

Technical Communications Evaluation Committee

As information for the new Directors, the President reviewed the Evaluation Committee of the Society active several years ago. It was the opinion of the past Boards that the Society not wait to evaluate its entire activities but that each year they take such action on specific departments within the operation. In the year 1968-69 the President is appointing a committee to evaluate the organization, policies and future programs of the Technical Communications activities of AFS. It is anticipated that the committee will begin meeting in the summer of 1968 and present their final report for discussion at the winter meeting of the Board of Directors.

Adjournment

There being no further business to be considered, the meeting was declared adjourned.

Respectfully submitted,

ASHLEY B. SINNETT
Executive Vice-President

Minutes

AFS Training & Research Institute Trustees Meeting

Pangborn Memorial, Des Plaines, Ill.—June 21, 1968

Roll Call: Chairman W. H. Buell (1965-1969), presiding, B. N. Ames (1967-1970), J. R. Bodine (1967-1971), J. B. Caine (1966-1970), H. C. Grant (1966-1970), W. W. Levi (1967-1971), J. O'Meara (1968-1971), C. A. Sanders (1968-1972) C. F. Seelbach (1966-1969).

Staff; R. E. Betterley, Director of Education, P. R. Gouwens, Director of Research, A. B. Sinnett, Secretary, E. R. May, Treasurer.

Absent; Trustees C. A. Johnson (1965-1969) and E. F. Tibbetts (1968-1972).

Reading and Approval of Minutes

The minutes of the Trustees Meeting held Tuesday, April 30 in Cleveland were read followed by the chairman's request for discussion. No discussion was forthcoming; therefore, on motion duly made, seconded and carried the minutes were approved as presented.

Report of Director of Education

a) Intensive Courses The 39 courses presented to date in the fiscal 1967-68 reached 1,209 students with an average of 31 students per class. One course remains to be presented in the fiscal period. This records the most active year in intensive courses since the Institute started in 1957. Fifteen of this year's courses were cosponsored with chapters on a regional basis. Last year recorded 183 new companies registering foundrymen in the program, 20 of which were active in the cooperative AFS-AWS seminar presented in Cleveland last October. At the close of the year, 239 courses will have been given to 7,115 foundrymen for an overall average of 29.8 students per course.

b) Special Courses The Advanced Seminar was presented to 30 key technologists Oct. 18-20, 1967. Preceding this, AFS and American Welding Society jointly presented a seminar on, "Manufacture by Composite Design," registering 79 participants. Six informal workshops were given, including the areas of nonferrous practice, induction melting, air pollution and permanent mold. Workshops are also scheduled on the latter three subjects durge the first half of fiscal 1969.

c) Programed Learning Courses Sales of the first home study course, "Basic Principles of Gating," have leveled off to expected volume, following the initial surge starting in February 1967. The second course, "Basic Principles of Risering," became available May 15 and is being promoted throughout the industry and is receiving very high interest. A third course, "Basic Principles of Ferrous Metallurgy," being authored by Clyde Jenni, should be available by the end of calendar 1968. The first course, "Basic Principles of Gating," has been published in a Japanese translation, having been given such rights by Addison-Wesley and AFS. AFS will realize the same commission and royalty.

Future programed learning courses being considered are: basic sand practices, core practices, cupola operation and general foundry practice.

Metalcasting Instructors Seminar

The eighth such seminar was conducted at Western Michigan University June 12-14 with 132 instructors and directors of technical schools registered. The 3-day program included intensive lectures, demonstrations and lab workshops.

Apprentice Contest

The 1968 Robert E. Kennedy Memorial Apprentice Contest was concluded at the 72d AFS Casting Congress and Exposition. Entries totaled 696, with 174 in the International competition. Twenty-six chapters held local elimination contests.

Career Guidance Project

The color filmstrip project is nearing completion. Contrary to initial plans for a one-package program, the program is

being divided into two sections; one for students not going to college and one for training in cast metal careers for those who are capable of higher education. Previews of the film were given at the AFS Convention and Chapter Officers Conference. The work is expected to be completed later this summer and will be announced through Modern Casting and direct mail to the chapters.

New Activities

Two on-campus T&RI courses for college credit have become a reality. The first, starting July 8, is a special casting institute presented for three weeks with Wisconsin State University at Platteville. It is offered for graduate credit to teachers and is also available to industry personnel as an introductory overall orientation program on the industry. To date, approximately 40 teachers are enrolled and it is hoped that some industry personnel will use the opportunity.

A second program is at Western Michigan University in Kalamazoo which has approved T&RI courses for 3 five-day programs to be made available to their students in engineering and technology. It is also available to personnel in the casting industry. The T&RI courses are carrying a full catalog number by the university—series 579 entitled, "Cast Metals Technology."

The initial plans call for 3 one-week courses, namely: sand technology—core practice, ferrous metallurgy—melting, gating and risering. The University students would take the full five-day program, however, industry may split the week-long course. Tentative plans at Western Michigan call for between semester periods. While the program is set up and included in the catalog, it is not envisioned that the first such offering can be scheduled before April 1969.

Future Development Committee Report

The final report of the committee was presented to the trustees February 28. With minor changes, the overall report was approved in principle and accepted. The limitations of all recommendations, however, now remain a matter of feasibility based on available staff time and financial burdens involved.

Chapter and Field Activities

The T&RI staff continues to serve the industry's educational interests through inquiries, technical school curricula, facilities layout, courses, films, textbooks, apprentice training and teaching personnel. Numerous speaking assignments have been conducted by the staff at AFS conferences, chapter meetings, seminars and related interest organizations.

Upon considerable discussion, the trustees accepted the report of the Director of Education as presented. Further, on motion duly made, seconded and carried the Trustees took the following action:

that the trustees fully reaffirm previous trustee action to develop and produce for industry use, two programed learning courses per year.

It is further recommended by the trustees that the State University of Wisconsin program at Platteville be followed up in detail to determine the feasibility of continuing such programs with the universities. It was recommended that all men in attendance be queried by correspondence or personal contact to determine the effectiveness of the program.

On motion duly made, seconded and carried the trustees issued the following directive:

that on completion of the Platteville course, a written evaluation be submitted by the Director of Education at the December meeting.

It was further recommended:

that the Director of Education develop a complete written report for submission at the December meeting and the details with recommendations in regard to the short-term course conducted in Milwaukee.

Report of the Treasurer

The treasurer reported that the financial condition of the Institute was excellent. The actual income and expense is in close range of forecast for the year. The training courses realized approximately $10,000 excess income. This is based on the fact that actual income, tuition fees and royalties will exceed forecasted budget by approximately $24,000.

Expenses are up proportionately due to the increased number of courses. The original budget was forecasted on 36 courses; however, 40 courses are actually being conducted during the fiscal year. It was pointed out that full burden is being applied to the Institute to include a portion of salaries of the Director of Research, Secretary and Treasurer. Burden also includes a portion of the Xerox, printing department, mailing, computer use and general overhead items which has been determined at $17,900 for the fiscal year.

Approval of 1968-69 Budget

The proposed budget for fiscal 1968-69 was presented to the trustees. Income is based on 40 courses conducted during the fiscal year at an estimated income of $130,000. It was further pointed out that research appropriations from AFS will be made to the amount of $100,000 to underwrite the research Institute activities.

On motion duly made, seconded and carried, the budgets of income and expense were approved as presented.

Recommendations of the Executive Committee

The chairman reported on executive committee action involving its obligation to recommend to the trustees a candidate to be the recipient of the annual trustees award as well as their prerogative of recommending to the AFS Board of Awards, a candidate for an AFS service citation.

It was the unanimous recommendation of the trustees: that Mr. Ray Meader, currently retired and formerly of the Whitin Machine Works, be awarded the 1969 T&RI Trustees Award.

Upon further recommendation, the trustees unanimously agreed:

that the name of Mr. Lewis Durdin of Dixie Bronze Co., Birmingham, Alabama, be submitted to the AFS Board of Awards for consideration of a service citation for the year 1969.

Both recommendations were approved on motion duly made, seconded and carried.

The secretary was instructed to execute a memo of recommendation with details concerning the service citation for submission to the AFS Board of Awards.

Further Recommendations of the Trustees

Following discussion, it was agreed that the staff workload has reached a peak where additional personnel are definitely required to ensure the continued growth of the program.

On motion duly made, seconded and carried the trustees approved the following resolution:

that the present staff proceed immediately to recruit a third man.

Announcement of Next Trustees Meeting

During discussions of the entire meeting trustees expressed concern that they, as a policy-making group, had not devoted sufficient time to policy-making activities but rather had been concerned with the details of the Institute operation in order to guarantee its successful initiation and acceptance by the industry. This having been accomplished, it is now the consensus of the Trustees that specific effort must be put forth by the trustees to establish policy to carry the Institute forward in the ensuing years. Recognizing that this is the primary function of the trustees, an interim meeting is being called for September 10, 1968 for the sole purpose of structuring growth policy in all facets of the Institute operation.

The chairman agreed to construct an agenda for the one-day meeting to commence at 8:00 am at the AFS Technical Center in Des Plaines.

Adjournment

There being no further business to be discussed, the meeting was declared adjourned.

Respectfully submitted,
Ashley B. Sinnett
Secretary

Minutes

AFS Technical Council Meeting

AFS Technical Center, Des Plaines, Ill.—July 2, 1968

Roll Call: W. W. Levi, Chairman, presiding
A. W. Bardeen, Vice-Chairman
B. N. Ames, President, AFS
G. A. Colligan
C. F. Joseph
F. L. Riddell
R. W. Ruddle
C. A. Sanders
G. E. Tubich (alternate for Gentile)
R. E. Betterley, Director of Education, AFS-T&RI
P. R. Gouwens, Vice-President-Technology, AFS
M. T. Rowley, Technical Director-Nonferrous, AFS

Guest: G. J. Vingas

Staff Guests: A. B. Sinnett, Executive Vice-President
J. H. Schaum, Director-Technical Communications

Absent: D. J. Gentile
H. H. Wilder

The minutes of the September 18, 1967 meeting were approved as distributed.

The report of the Molding Methods & Materials Group was jointly presented by Sanders and Vingas, who reported that the reorganization of the committee structure has successfully accomplished its objectives. One committee remains less active than is desirable, but all others are meeting frequently and fulfilling their functions.

The 1969 Casting Congress plans have started with the selection of the Silver Anniversary Paper and a potential 18 papers already known. They will continue to schedule only two papers per session.

Additional research activities from the Group were requested by Ruddle. Consequently, it is estimated that an additional $8,700 for existing project continuation will be requested. In addition, proposals related to penetration phenomenon will be solicited. Sanders assured that a letter proposal from the Group on the subject will be sent to the Research Board and may involve research in Europe. According to previous action of the Technical Council such contracting is possible under circumstances where domestic research is inadvisable.

R. E. Betterley reported on the status of the T&RI educational efforts, advising that 41 classes were presented, including six workshops, one advanced seminar and an instructors seminar. Fifteen of these were regional, with a chapter cosponsoring. The registration during the last three years represents 46% of the total registration for the 11 years of T&RI existence.

The offering of programmed learning courses has been outstandingly successful, with two courses presently available. New deveopments include on-campus credit courses, and a pilot course in secondary schools at Milwaukee.

Gouwens reported on the recommendations of the Ad Hoc Committee on Future Development emphasizing the need for improved research communications.

The Research Board activities reviewed by Ruddle included three meetings throughout the year, one of which was a two-day session. Seven new research projects were approved during the year of which six have been contracted. The Board approved the extension of five existing projects and has ended up with an uncommitted balance of $20,899. Ruddle encouraged the individual Groups to continually submit research ideas in order to provide an adequate background of suggestions to permit discrimination in the selection. Five proposals were rejected and three existing contracts have been terminated.

Formal liaison has been established with each of the Divisions and effective communication is being encouraged. The Research Board is reviewing long-term aspects of research in an effort to focus its attention on high priority items of both short and long-range duration.

D. J. Henry has been appointed for an additional five-year term by President Seelbach.

Colligan, as Chairman of the CAST METALS RESEARCH JOURNAL Editorial Board, stated that the Journal is now in its fourth year of publication and has used technical papers from the U.S. and many foreign sources.

Rotation of new members into the Board has added R. J. Warrick and A. J. Kiesler as replacements for H. R. Larson and K. D. Millis.

Currently the format consists of articles which have been translated and condensed by the staff to increase the number of articles presented. Colligan complimented the technical editor for the quality of abstracting and condensing. Recently the "Cast Metals Forum" has been added as a partial replacement for "Research in Progress". Subscriptions have increased by direct advertising and currently are approaching 1,500, with a very low incidence of drops. In the future a subscription rate increase will be considered.

Ferrous Metals Group activities were reported by C. F. Joseph. The Gray Iron Division program for the past year was good, but the number of papers was less than desirable. The request of the Gray Iron Program & Papers Committee to proceed with a possible merger with the Ductile Iron Program & Papers Committee was discussed. In light of the existence of a Group Program & Papers Committee which can be responsible for coordination of efforts, it was moved, seconded and carried that this request for a merger be rejected.

The Ductile Iron programming efforts and activities have in

general been excellent. One committee remains inactive, but efforts are underway to improve this.

The Malleable Division committees are all functioning effectively, and the existence of the research project on nitrogen solution has satisfied their desire to be involved in research projects. Three projects on "in house" research are under consideration by the Executive Committee and is to be encouraged. The Division requested permission to formulate an ad hoc committee entitled "Malleable Sand Systems Control Committee" which would have the function of coordinating and monitoring research carried out in the plants on this particular subject. It was moved, supported and approved that this request be granted.

The Related Interests Division has some committees on standby but others are very active. Two comittees along with one of the Gray Iron committees are planning an Electric Furnace Iron Melting Conference for the fall of 1969. The Melting Methods Committee is formulating a revised outline for a new edition of the Cupola Handbook, and the Heat Transfer Committee is controlling a research project on heat transfer.

The Steel Division activities have been at a comparatively low ebb, and discussion centered around the possible ways to enhance its activities. It was suggested that the existence of a research project would stimulate interest, and Sanders suggested that a suitable project could be on the interaction of ceramic materials with the metal. His ideas will be forwarded to Gouwens and Ruddle.

The formation of a new committee on sand technology and possibly on permanent molding was discussed, but no formal action was taken.

The Nonferrous Metals Group activities were reviewed by F. L. Riddell. The 1968 program was judged satisfactory in quality but not in quantity. The round table and shop course, however, were well received. Joint programming with the Light Metals and Brass & Bronze Divisions, particularly in the area of research paper presentation, was complimented.

Riddell reported that there still is some apprehension about the existing research project and that specific suggestions have been made that research be conducted on gating, with particular involvement in the problems of kiss gating red brass. There is an urgent need that closer liaison be esablished between the research monitoring committee and the contracting agency doing the brass and bronze research.

The membeship of the Brass & Bronze Division has been augmented by the addition of several new people, most of whom are serving on the Program & Papers Committee. The Brass & Bronze Division is formulating a questionnaire which will be distributed to a selected audience to gain informaton on practices related to gating ratios, sprue sizes, gating configurations, etc.

The Light & Reactive Metals Division report was not available, but it is known that there is little activity in the die casting segments of that Division. No recommendations for change were made, however.

In the absence of Gentile, the report of the Engineering & Design Group was presented by G. E. Tubich. He reported that the overall activities of the Group have been good. Twenty-five technical papers and two round table luncheons were sponsored at the Congress. For the first time an air pollution round table luncheon was convened to discuss the problems of operating dust collection devices. This was very successful.

The Casting Design Division has participated in 21 seminars throughout the United States.

A new committee on Computer Applications has been organized, and the Safety Committee has been reactivated for the purpose of revising the handbook. During the year the Foundry Air Pollution Manual and the new Manual of Water Pollution have been completed. The Dust Control and Ventilation Manual is being updated, and an Industrial Engineering Job Classification Handbook has been started.

Tubich commented that the Pattern Division has encountered difficulties in programming at the Congress and solicited suggestions from each member of the Council on ways and means to overcome this problem.

Tentative plans for the 73rd Casting Congress scheduled for May 5-9, 1969, in Cincinnati were briefly discussed. The Program & Papers Committees of most of the Divisions have met and initiated their search for appropriate authors or topics.

The Charles Edgar Hoyt Memorial Lecture has not been finalized but the selection will be made in the very near future. The World Exchange Lecture topic and speaker, furnished by France, have not been finalized.

On new sessions it was suggested that some of the areas which have been neglected, such as centrifugal casting or ingot mold production or white iron, be given some emphasis. The technique employed by the Plant Engineering Division for their round table was favorably commented on by Gouwens and Tubich with the recommendation that other Divisions consider modifications akin to it.

The need to continue with "how to do it" sessions was discussed, and the consensus arrived at that such programming was essential. The mechanism for doing this programming should be through the Group Program & Papers Committee. Gouwens is to contact these committees and request them to proceed with planning for the 1969 Congress with the recommendation that a common theme be followed.

The status of publications was reviewed by J. H. Schaum who submitted the listing of books and pamphlets marketed by AFS. The addition of several new items not generated by the Society was emphasized. The plans for production of research reports and new books or manuals was discussed. The collaboration with the Investment Casting Institute and the Nonferous Founders Society in publishing items of mutual interest was cited as an example of a desirable liaison. It was suggested that an area not presently covered in our publications is the generation of textbooks for use in T&RI. Over a long range such a procedure is recommended, but the difficulties of implementation were not resolved.

Gouwens discussed some of the long-term plans and commented on the need for the Technical Council to act as the planning and policymaking body for all technical activities. Items of possible future implementation were the Electric Furnace Iron Melting Conference and a possible venture into a Technical and Operating Nonferrous Conference. The latter could be run in conjunction with the normal Casting Congress.

Gouwens also emphasized that the planning of a new Cast Metals Handbook should begin now and recommended that this could be accomplished by the formulation of individual state-of-the-art reports on the different aspects of cast metals technology. These could then be used as the basis for much of the Handbook.

General discussion ensued concerning the difficulties the Technical Council had in reviewing and controlling the technical activities. It was agreed that the implementation of ideas was the responsibility of the Council along with the staff, but the suggestion from the Ad Hoc Future Development Committee relating to the communication of information to the membership would require a great deal of study. In the future it was agreed that the Technical Council should put first priority on planning and policy making.

It was recommended that an advance agenda along with the prepared reports of each item on the agenda be made available to the Council members prior to the meeting. It was also agreed that the Council should meet twice each year. Furthermore, the possibility of changing the term of office to incorporate a longer cycle was discussed. Gouwens was instructed to circulate a letter ballot to the Council prior to July 25.

Ames emphasized that the redirection proposed for the Technical Council activities was most important and expressed his desire that long-range developments receive top priority. He also expressed his appreciation to the Technical Council for their efforts and felt that more recognition of the individuals was essential. It was recommended that such recognition could be accomplished at the Annual Banquet.

Tentative plans were made to hold the next meeting of the Technical Council as a two-day session some time in December.

The meeting was adjourned.

Respectfully submitted,

PAUL R. GOUWENS
Vice-President-Technology

Minutes

Meeting of AFS Board of Directors

Sheraton-O'Hare, Des Plaines, Ill.—July 25-26, 1968

Roll Call: President B. N. Ames, presiding
Vice-President J. O'Meara

Directors (1966-1969)
G. P. Antonic
M. E. Ginty
L. W. Greenslade
W. O. Larson, Jr.
J. O. Ochsner
J. L. Payne
M. Reading
C. F. Seelbach, Jr.
E. J. Texler

Directors (1967-1970)
J. W. Beckham
F. Coghlin, Jr.
J. E. De Groot
J. B. Essex
E. H. Hill
L. Winings

Directors (1968-1971)
S. C. Clow
K. H. Kostenbader
W. L. Mackey
K. D. Millis
F. S. Ryan
J. Toth
C. Locke (ex officio)

Staff: A. B. Sinnett, Executive Vice-President
P. R. Gouwens, Vice-President-Technology
E. R. May, Vice-President-Finance
W. A. Schaw, Assistant Secretary
J. H. Schaum, Director of Technical Communications
R. E. Betterley, Director of Education
M. C. Dwyer, Exhibits Manager
D. J. Kubala, Director of Computer Services

Absent: Directors A. W. Anderson (1966-69), N. H. Mingledorff (1967-70) and P. S. Savage (1968-71)

A quorum having been established, the President called the meeting to order.

Reading and Approval of Minutes

The minutes of the final meeting of the 1967-68 Board of Directors, April 28, 1968 and the first meeting of the 1968-69 Board, May 4, 1968, having been approved by Letter Ballot, were accepted without comment.

Recommendations from the meeting of the Finance Committee, June 20, 1968 were deferred until consideration of the 1968-69 Budget.

Annual Reports of Staff Officers

(a) Report of Vice-President—Technology.

The 1968 Casting Congress Program included 101 technical papers, 2 seminars and 4 panels in 61 technical sessions and represented the effort of 237 authors. Highlights of the program included the presentation of AFS-T&RI sponsored research work in 11 separate reports. The 1968 Hoyt Lecture "The Evaluation of Discontinuities in Castings under Industrially Stressed Conditions", was presented by Mr. C. E. Briggs, and the 2nd World Exchange Lecture. "The Influence of Some Elements on the Matrix and the Properties of Ductile Iron Castings after Solidification in Sand and Ingot Molds", was presented by dr. Ing. J. Motz.

The new policy of advanced deadlines for acceptance of official paper abstracts and manuscripts was reasonably successful and resulted in the early publication of the complete Congress program. Committees formulating the 1969 Casting Congress program (May 5-9 in Cincinnati) held meetings on July 1 and are expected to advance program deadline dates.

The 35th International Foundry Congress will be held in Kyoto, Japan, October 6-11, 1968. The official exchange paper "Processing and Control of Ductile Cast Iron", will be presented by Prof. C. Loper, and Official Delegates from AFS will be N. J. Dunbeck and P. R. Gouwens.

Technical Committee activities included 91 meetings during the year. In continuing the Technical Committee reorganization, the Molding Methods and Materials Group consolidated three divisions into a single group and merged a number of committees. Also, the Die Casting and Permanent Mold Division was merged with the Light and Reactive Metals Division. Both consolidations were approved by the Technical Council in maximizing committee effectiveness.

SH&AP Activites have continued to expand, with a particular increase in demand for the service in the area of in-plant environment control. Problems related to legislation have been given the highest priority by the SH&AP program, offering assistance for the formulation of fair regulations at local, state and national levels. This assistance has included recent involvement with the U.S. Department of Commerce, Public Health Service, and United States Congress as well as a number of states, provinces and municipalities. The SH&AP engineering consulting service was extended to 19 corporate member foundries, and 22 AFS chapters during the past fiscal year.

Library and Information Services have had substantial growth during the past fiscal year with 676 companies entering 2,009 requests. This growth is in part due to the success of the new AFS Current Awareness Service, instituted in January, 1968. Well beyond expectations, 186 subscribers now receive in-depth abstracts on a semi-monthly basis. The additional income created by the Current Awareness Service is being applied to the further development of document rerieval data and the tentative installation of a microfilm system to speed up retrieval processing and reduce costs.

Technical Staff additions since August, 1967, have included Mr. M. T. Rowley as Technical Director—Nonferrous, and staff additions previously approved by the Board include a Technical Staff Assistant and an Assistant to the Director of SH&AP.

AFS-T&R Research. A summary of research for fiscal 1967-68 reported the financial commitment of $68,820. Abstracts of current research, funds committed, and status of research since the beginning of increased funding in 1965-66 were also presented. The uncommitted balance of $20,899 has been assigned to the Research appropriation for 1968-69 of $141,766 which also includes the transfer of $100,000 from AFS, $7,067 from the International Copper Research Association, and $13,800 from Research Patron Dues. The Research Patron contribution for the past three years has established a reserve research fund of $40,200, to be used to guarantee continuing programs and specific projects.

It was noted that the AFS Research Board has established research monitoring committees to assure compliance with the objectives of each project. A further acceleration and more definite utilization of research within the framework of long-term planning is being implemented by the Research Board.

(b) Report of the Director of Technical Communications.

MODERN CASTING published 58,680,000 pages which were distributed to 26,400 readers during the fiscal year. For the fifth consecutive year, MODERN CASTING expanded its display advertising with an increase of over 100 pages in 1967-68. This increased income has permitted continued improvements in the magazine without funding by the Society, and an increased assumption of the overall burden of publications activity. The pre-convention issue of MODERN CASTING

was particularly noteworthy, with the publications of the complete official program for the 1968 convention one month earlier than ever before.

The Cast Metals Research Journal has grown in both editorial scope and in the number of subscribers. During 1967-68, 25 articles were published in the Journal compared to 15 in the same period a year ago. Subscriptions, including a high percentage of renewals, have increased to 1,499.

Technical Books and Research Reports achieved sales of 13,167 volumes representing $118,610, exclusive of the Research Journal. New publications produced during the fiscal year included:

AFS Metalcasting Dictionary
Foundry Air Pollution Control Manual
Metalcasting Instructors' Guide
AFS Current Information Report
Basic Principles of Risering
4 Research Reports.

Schedules for publication in 1968-69 are six books and 10 research reports. Due to earlier deadlines for official Casting Congress papers, it is anticipated that the AFS TRANSACTIONS will be published during the month of October in 1969, or two months prior to previous publication.

(c) Report of the Exhibits Manager.

The 1968 AFS Exposition established an all-time record with a gross square footage of 102,250 sq. ft. utilized by 236 exhibitors. This compares to an 87,150 sq. ft. in 1966 and 70,000 ft. in 1964. A substantially greater number of exhibitors featured operating equipment in colorful action displays.

The package plan and cubic content options were definite influences in the success and are intended to be continued in the 1970 Exposition. Future AFS Exposition locations include: 1970, Cleveland; 1972, Philadelphia; and 1974, Cleveland.

(d) Report of the Director of Computer Services.

The AFS computer was delivered May 14, 1968, and installation completed by May 27. Both the hardware as installed and software support have proven excellent. The AFS in-house program operation and file conversion from the service bureau are proceeding with exceptional success and the installation is expected to be fully operational by the pre-set target date of August 10, 1968. It was noted that very few new installations are able to maintain such pre-set schedules.

The AFS master program implemented in the installation has already resulted in a greater degree of control over membership files than possible through service bureau processing. The new system has also dramatically decreased clerical burden through the volume and types of forms required for record processing.

Following operational conversion of membership and circulation computer files, additional systems scheduled for conversion include AFS miscellaneous lists now maintained on Addressograph, Reader Service program, Buyers Directory listings, and technical information and data retrieval. During the current period of creating these new systems, a 100% usage of available computer time is anticipated.

(e) Report of the Director of Education.

During the fiscal year, 40 courses were presented to a record enrollment of 1,224 students. The 40-course total included 15 chapter co-sponsored regional courses, an increase from 11 regional courses in the prior year and 8 in 1965-66. The 11-year old T&RI program has now presented 239 courses to 7,105 foundrymen, of whom over 40% have participated in only the last three years. An Advance Seminar and six informal Workshops were also presented by T&RI during the past fiscal year. In addition, a special cooperative seminar between AFS and the American Welding Society was held on the subject "Manufacture of Composite Design".

The Programmed Learning Course series initiated in February, 1967, has received high industry interest and acceptance. A second course, "Basic Principles of Risering," became available on May 15, 1968. The next Programmed Learning course to be published will be "Basic Principles of Ferrous Metallurgy," with additional courses considered including "Basic Sand Practice", "Core Practices" "Cupola Operation", and "General Foundry Practice".

The 1968 Apprentice Contest totalled 696 entries from 242 companies and schools. A record 26 AFS chapters sponsored local elimination contests resulting in 174 entries in the five divisions of the International competition.

The 8th Metalcasting Instructors Seminar was attended by 132 instructors and vocational directors from technical schools, industry, teacher training institutes and state departments of education. The seminar was conducted at Western Michigan University, June 12-14, 1968.

The Career Guidance Committee of T&RI is sponsoring the development of two film strips promoting career opportunities to secondary schools, one designed for non-college and the other for college preparatory students. Both film strips are nearing completion and will be available to all AFS chapters in late 1968.

Two new activities being added to the T&RI educational program include a four-week Casting Institute conducted in cooperation with Wisconsin State University at Platteville, Wis., and a university-approved series of three T&RI courses to be conducted at Western Michigan University at Kalamazoo.

The T&RI Future Development Committee presented its final report to the T&RI Trustees on February 28, 1968. T&RI committees have already been reorganized as recommended by the committee, with further implementation of recommendations dependent on available staff time and financial burden involved.

The Chairman noted that the T&RI Trustees intend to direct their efforts to policy-making activity and have called an interim meeting on September 10, 1968 for the purpose of discussing organizational structure and growth policy in all areas of the Institute operation.

The T&RI Audit and Minutes of the Trustees Meeting June 21, 1968 were presented to the Directors as general information.

(f) Report of the Executive Vice-President.

Active Society membership reached a total of 13,735 at the close of fiscal 1967-68, representing a net gain of 256 members. This member increase continued a five-year pattern of growth in which the Society added a net total of 2,574 members. Corporate activity sustained a slight decline compared to corporate member gains in the three prior years, due in part to company mergers. Expanded membership efforts directed to individual and corporate members are expected to increase Society growth in both areas during fiscal 1968-69.

A major area of concern is the percentage of members who renewed after being dropped for non-payment of dues. Although the renewal percentage increased by 3% over 1966-67 to 27.3%, renewal activity remains substantially below the annual 45-50% renewal rate pattern prior to 1966. A greater emphasis on the problem of dropped members and a more precise computer identification of all drops are expected to favorably increase renewal activity in the coming fiscal year.

A detailed analysis is being developed to establish potential for both Corporate and Affiliate member participation by individual companies. An extensive Corporate Membership program is projected during 1968-69, with direct mail activity supplementing personal contacts by local chapters and the AFS Board of Directors.

It was recommended that the AFS staff investigate the possibility of incorporating the Lancaster, Reading, Conestoga, and Lehigh Valley Foundrymen's groups as sections or as regular AFS chapters. An analysis is to identify duplicate membership in AFS and those organizations.

The staff was further directed to prepare a proposal for Company and Personal Member plaques or certificates, together with their costs, for presentation to the Finance Committee at its December meeting.

The Chapter Officers Conference was attended by 87 delegates from 47 chapters, including attendance by all new Society Directors. Chapter Operations were emphasized in the two-day program as related to new programs of the Society.

General Administration. The AFS staff now numbers 34 full-time plus 2 part-time employees. The staff will continue to seek qualified candidates for two positions on the Technical

staff, an Assistant Director of SH&AP, and a third man in the Technical Department experienced in molding methods and sand technology.

The Society's operations have continued to expand in scope and grow in participation. However, exceptional efforts will be required during 1968-69 to retain the membership growth pattern in view of a general business softening projected for 1969. Additional membership activity is planned to provide income support for both current operations and future program expansions.

On motion being made, seconded, and carried, the Board approved the Staff Officers' Reports.

Annual Reports of Board Committees

The National Castings Council. The most significant development discussed at the NCC meeting April 30, 1968 was the effect of air pollution legislation on the foundry industry throughout the country. Proposals discussed included seminars to establish liaison with air pollution control equipment manufacturers for the development of economical and effective control devices for smaller foundries. Also discussed were pending legislation and controls in Washington, the labor situation, and mobilization planning. James P. Keating, NCC President, is preparing a report on potential new areas for NCC service and involvement on behalf of the industry.

Chapter Conttacts Committee. Chairman O'Meara requested that all chapter contacts by Directors be made as early as possible for a most effective liaison between the chapters and Board of Directors. He recommended that Directors review the contents of the Chapter Contacts Manual for inclusion in their official visit.

SH&AP Steering Committee. Chairman O'Meara reported that five sub-groups of the Committee are actively operating in the areas of education, legislation assistance, research, liaison, and engineering services. The program has been highly successful during the past year in achieving the adoption of equitable local and state legislation. Areas currently being surveyed by the Committee include the development of data from foundries on the effects of compliance with existing legislation.

Honorary Lecture Committee. The 1969 World Exchange lecturer will be furnished by the Association Technique de Fonderie of France. The World Exchange and the Hoyt Memorial Lecturers for 1969 have not yet been designated.

Report of the Vice-President—Finance

An itemized Comparative Statement of Income and Expense and the 1967-68 Audit were presented in support of the report by the Vice-President—Finance. The General Fund of the Society showed a marked increase in fixed assets representing the purcrases of a computer, an increase from $451,839 to $666,452. It was proposed that the computer be charged to operations over a five-year period rather than the usual ten years. The growth in fund principal from $634,373 to $884,632 has underwritten computer installation, equipment and facilities for the more efficient handling of technical communications, and planned basic refurbishing of the Central Office.

The Operations Summary indicated the Society's income equalled $56,859 above forecast or an actual net income of $250,259 compared to budgeted net income of $193,400.

Exposition revenue exceeded budget by $61,426 and represents an increase over 1966 of $47,871. Other major accounts where income exceeded budget included MODERN CASTING. Fiscal expense activities moderately exceeded budget with an actual expense of $306,475 compared to the budget of $304,100.

Approval of Annual Audit 1967-68

The Annual Audit of the Society's financial status as of June 30, 1968, prepared by Roeder, Burline & Company, Certified Public Accountants, Chicago, was presented, discussed in detail and approved on motion duly made, seconded, and carried.

Selection of 1968-69 Auditor

Following the approval of the 1967-68 Audit, the Board of Directors, on motion duly made, seconded, and carried, named Roeder, Burline & Company as the Society's Auditors for the fiscal year 1968-69.

Recommendations of Finance Committee

The President presented the Finance Committee's recommendations for the 1968-69 fiscal year which included recurring income of $1,332,700 and a recurring expense of $1,299,600 or a net fiscal income of $33,100. It was reported that the Committee's estimates of income were very conservative in view of possible softening of business conditions.

Membership income budgets at $460,000 reflected increased corporate dues for Company and Sustaining members, less a projected 10% loss in corporate members due to the dues increase. Other major sources of income included an increase in MODERN CASTING display advertising income to $640,000. This increase was based on the recent rate increase and credited to only the second six months of the fiscal year with a forecast of no increase in total pages.

Three recommendations by the finance Committee affecting income were as follows:

THAT the annual subscription rate for the Cast Metals Research Journal, now published in four editions, be—

AFS Members $10.00
Non-Members $25.00

THAT the Casting Congress registration fee in non-exposition years be increased to—

AFS Members $15.00
Non-Members $30.00

THAT the annual subscription rate for MODERN CASTING be increased to—

Domestic .....$ 8.00
Foreign $15.00

All of the above recommendations were based on actual operating cost comparison against income and will reduce or eliminate deficits in those activities. The resulting increased income had been accounted for in forecasted fiscal income.

It was the further recommendation of the Finance Committee that in keeping with Board policy, the sum of $200,000 from excess revenues be allocated to research in the years 1967-68 and 1968-69. This being accomplished, the Finance Committee recommended:

THAT of the remaining excess revenues $100,000 be allocated to the purchase of the computer.

On motion made, seconded, and carried the recommendations of the Finance Committee on the 1968-69 budgets were approved as presented.

Election of Staff Officers for Fiscal Year 1968-69

The Board nominated and elected as staff officers for 1968-69, Executive Vice-President, A. B. Sinnett; Vice-President—Finance, Edward R. May; Vice-President—Technology, Paul R. Gouwens; and Secretary, Walter A. Schaw.

Report of Executive Committee

A report of a special meeting of the Board Executive Committee held July 25, 1968, was presented, announcing the following Nominating Committee appointees who will meet December 9, 1968:

Region 1, Chapter Group A:
William J. Sommer, Chf. Met., Plainville Casting Co., Plainville, Conn.—rep. Gray Iron (Connecticut Chapter)

Region 2, Chapter Group C:
Milford H. Paris, Fdy. Supt., Ingersoll-Rand Co., Painted Post, N.Y.—rep. Gray Iron (Penn-York Chapter)

Region 2, Chapter Group D:
James Keter, Tech. Rep., Foseco (Canada) Ltd., Guelph, Ont. Canada—rep. Supplies (Ontario Chapter)

Region 4, Chapter Group I:
Clifford J. Lonnee, Pres., Alloyed Grairon Castings Corp., Ravenna, Mich.—rep. Gray Iron (Western Michigan Chapter)

Region 5, Chapter Group L:
Norman N. Amrhein, Pres., Federal Malleable Corp., West Allis, Wis.—rep. Malleable (Wisconsin Chapter)

Region 7, Chapter Group Q:
William D. Emmett, Steel Casting Div. Shaffer Tool Works, Los Angeles, Calif.—rep. Steel (Southern California Chapter)

AFS Trust Study

The President reported that the following recommendation by the AFS Trust Study:

> THAT quarterly reports be issued by the Harris Trust & Savings Bank, Chicago, for the Investment Advisory Account; and that no less than 70% of the Fund be invested in common stocks, representing an increase from a prior recommendation of 60%.

It was further recommended that the Vice-President—Finance add his comments to the regular report of Harris Trust & Savings Bank on the status of the trust fund.

AFS Technical Communications Evaluation Committee

President Ames reported the appointment of a Technical Communications Evaluation Committee with an organizational meeting having been held July 17, 1968. The Committee has divided its responsibilities into two sub-committees one concerned with technical publications and the other general publications. A report is anticipated by the December meeting of the AFS Finance Committee.

1975 Casting Congress

Vice-President O'Meara proposed to the Board that St. Louis be selected as the site of the 1975 AFS Casting Congress. Following discussion, it was duly moved, seconded, and carried that St. Louis be established as the Official 1975 location.

Membership Campaign for 1968-69

The secretary presented a proposed campaign to stimulate membership growth during fiscal 1968-69. The campaign included an individual membership campaign open to all AFS members, a special chapter membership chairman's campaign with competition to identify, solicit, and gain both new and upgraded corporate members. An outline of the campaign, schedule and supplemental activity were included in the report.

On the basis of estimated expense as submitted for this campaign the staff requested that the amount of $5,000 be added to $3,000 previously recommended in the 1968-69 budget for a total budget item of $8,000.

It was moved, seconded, and carried to adopt the 1968-69 membership campaign as presented.

Management-Membership Committee

Chairman Payne reported that the Board Management-Membership Committee will be actively engaged in the personal contact prospects for both new and upgrading corporate memberships. He reported that a goal of 50 Sustaining members and 75 Company members as net gains had been set for the conclusion of the fiscal year.

Announcement of Next Board Meeting

The President announced that the next meeting of the Board of Directors will be held at Kings Bay Yacht & Country Club, Miami, Florida, on February 3-4, 1969.

Adjournment

There being no further business to be considered, the annual meeting of the AFS Board of Directors was declared adjourned.

Respectfully submitted,

ASHLEY B. SINNETT
Executive Vice-President

Minutes
AFS Training & Research Institute Trustees Meeting

AFS Technical Center, Des Plaines, Ill.—Sept. 10, 1968

Roll Call: Chairman W. H. Buell (1965-1969), presiding

B. N. Ames (1967-1970)
J. B. Caine (1966-1970)
W. W. Levi (1967-1971)
J. O'Meara (1968-1971)
C. A. Sanders (1968-1972)
C. F. Seelbach, Jr. (1966-1969)
E. F. Tibbetts (1968-1972)

Staff: R. E. Betterley, Director of Education
P. R. Gouwens, Director of Research
A. B. Sinnett, Secretary
E. R. May, Treasurer

Absent: Trustees J. R. Bodine (1967-1971), H. C. Grant (1966-1970), and C. A. Johnson (1965-1969)

A quorum having been established, the Chairman called the meeting to order, stating the purposes of the special meeting were to completely review the existing policies and governing principles of the Institute and to formulate policies to insure continuing growth of the Institute.

Research

The Chairman brought to the attention of the Trustees that the original concept of the Institute had as its purposes. in addition to education, research sponsorship in cooperation with the parent organization, the American Foundrymen's Society. It was pointed out that the research grants are transferred to the Institute and all contracts with the agencies are executed by the Institute and the monies paid from Institute funds. Presently, funding of the research is 100% from AFS by direct contribution on an annual basis. However, it was the Trustees' opinion that they were not solely acting as free agents in the execution of the research funds in that the control was still basically with the Society, specifically through the AFS Research Board who is the controlling body of the research funds. Therefore, following considerable discussion, the following action was recommended by the Trustees:

> THAT a revised T&RI organization chart, to include the Research Board within the structure of the Institute, be presented to the AFS Board for approval at their next meeting.

The Research Board would then become a standing committee of the Institute, responsible to the Trustees who are in turn responsible to the AFS Board. The Institute organization structure would then be updated according to its governing principles by which it was incorporated and on which basis it received its foundation classification. It should be pointed out, however, that the research function, as currently being carried on by the divisions of AFS, would continue as in the past. Placing of the Research Board within the structure of T&RI would merely activate, factually and on paper, the process which is actually occurring at this time. Transfer of the Research Board would, in effect, update the T&RI operation in accordance with its mode of operation during the past several years. It should be pointed out that the Research Board was not in existence at the time the enabling resolutions and governing principles formulating T&RI were approved.

Another key area receiving discussion concerned commu-

nicating research results of the Institute and the Society. It was the opinion of the Trustees that a great deal more effort and programming must go into the communication program as related to translating and presenting research results to the industry. Previous to five years ago the research budget was nominal. However, with the quadrupling of expenditures for research, considerably more data is being generated and it is this information that must find its way into the industry. An in-depth study was recommended to formulate the proper methods to deliver these results in operating language to the industry for execution in their plants.

It was reported by the Director of Research that several schemes are being studied to include programs of a technical operating nature, programs geared to apply research results in a given plant followed by rewriting in operating nomenclature for mass distribution. Also being studied are possible seminars on specific subject matter for a one or two day duration. It was pointed out that the current Technical Communications Appraisal Committee has as one of its charges, the challenge of recommending specific aims and programs that would effectively disseminate research results. This problem is recognized by the Society and efforts are being made to develop effective programs in this area.

The Director of Research was requested by the Trustees that at each annual meeting of the Trustees he submit a complete report on all research. Such a report should include the proposals, agencies with whom contracts are current as well as proposed, and an accounting of all expended research funds as well as proposed expenditures.

It is further requested by the Trustees that the Treasurer should write a letter to the trustees each year announcing the transfer of funds. This should be done in each instance where a transfer is made whether it be quarterly, semi-annually or annually.

Development of Course Materials

A great deal of the Trustees' meeting was consumed deliberating the necessity for the development of proper course material. It is the philosophy of the Trustees that every course curriculum should be detailed and supplemented with printed course material to the point that the actual instructor is not the prime factor in delivering intended material of a given course. It was the opinion of all Trustees that extensive effort should be put forth to upgrade all of the current courses. A reorganization, if necessary, to insure the ultimate goal that each course would, at the earliest possible date, have its own textbook.

Suggested means toward accomplishing this end is full use of the many areas of assistance now available. First, all AFS publications should be reviewed carefully and those books and reports that apply should be assigned to the courses. A great deal of this is currently being done. However, further review was recommended. Further, with the AFS publishing activities it is highly probable that a series of course texts can be developed in the form of pocketbooks that have a retail value to the industry beyond the needs of the Institute courses. It was suggested that the Director of Education be a part of the next publications meeting and review with the Technical Communications department those areas in which he needs specific assistance in development of text material.

The Trustees were in agreement that the Divisions of the Society could well be called upon to write specific texts for courses. Beyond the divisions, it was suggested that the Director of Education review the potential of retired personnel who might be utilized to a greater degree than is currently being considered. It was pointed out that such individuals are being considered and used in the development of Programmed Learning Courses.

During the discussion several of the Trustees pointed up the value of considering a special seminar for instructors of specific courses to insure continuity in the presentation of a given course. It is the opinion of some of the Trustees who have participated as faculty that although there is an outline to guide the respective instructors there is a considerable amount of overlapping in material presented. Rather than a specific seminar, such a meeting might be classified as orientation session for the instructors of a given course.

Further, toward the development of specific course material, Trustee Sanders volunteered a series of sand books that have been written by American Colloid Co. as the core material for such a text to be used in the Basic Sand Courses. He recommended that the Molding Methods & Materials Group of AFS develop a committee to be charged with the editing and rewriting of these manuals into the proper form for T&RI courses. The Trustees expressed their gratitude and Trustee Sanders agreed to take it before the AFS Group at the next meeting.

Present Course Refinement

A major area of discussion during the Trustees Meeting concerned whether or not T&RI should continue to expand its courses and in what areas. Ensuing discussion resulted in the consensus of the Trustees that T&RI should hold back on any expansion of new courses and expend their efforts in refining and upgrading the quality of present courses. It was generally agreed that work should be done specifically on the basic courses such as Sand and Gating and Risering. These fundamental courses need particular attention in refinement. To accomplish this refinement, it was the consensus that a committee should be developed for each specific course and that a handbook be written. This would accomplish the early recommendations that text materials should prevail for every course offered by T&RI. Further, to assist in such refinement, it is strongly recommended that whenever possible the instructors for a given course meet in advance of the course to compare notes before the presentations are delivered. This coordination is most important for the continuing success and upgrading of the courses.

Toward accomplishing the goals of course refinement and improved quality, the following recommendation was made, seconded, and unanimously approved:

> THAT the elementary sand course material offered by American Colloid Co. be turned over to the Molding Methods & Materials Group to be remodeled and presented as a part of the 284 Series Course, Mulling, Molding and Control of Sand. Further, the Division to assist the staff in developing a corps of instructors for the course, and third, present a seminar for prospective instructors for the course.

Further, the Trustees, on motion duly made, seconded and carried, approved the following recommendation:

> THAT the Director of Education be directed to continue the effort of production of text material for all of the 100 and 200 Series courses.

Secondary School Program Activity

The Chairman highlighted specific points concerning Vocational Education Act of 1963, as established by the Federal government. He pointed out that the various agencies had been organized under the jurisdiction of the State Department of Education to specifically develop vocational education programs. Each state across the country has such an office and agency to further the purposes of the Vocational Education Act. In the State of Michigan a Mr. William Pearce heads up this program and has been queried as to the ways T&RI might cooperate to bring about the presentation of cast metals courses in the vocational schools. The Chairman asked the Trustees if they wished him to pursue the possibilities for further cooperation with the State Agency. It was the unanimous consensus of the Trustees that Chairman Buell should pursue such efforts on behalf of the Institute with Mr. Pearce.

Trustee Tibbetts from Massachusetts commented on an active program of the same nature developing in his state. He volunteered to review the activity with the respective officials and report to the Trustees.

An in-depth discussion continued on ways and means T&RI could assist with secondary schools in starting cast metals programs. These would be programs aimed particularly at the junior and senior high school levels as part of the industrial arts programs. The staff pointed out that it is quite possible that T&RI could develop a complete package program and, in addition, offer a direct consulting service to assist them in starting such programs. As a result of discussions, the Trustees, on motion duly made, seconded and unanimously carried, issued the following recommendation:

THAT T&RI proceed within its objectives to assist with specific services to all schools and educational directors at all levels with specific reference to secondary and community college (technical institute) levels.

Governing Principles

During the course of the meeting, the governing Principles of the Institute were referred to in several instances. It became obvious that the various modes of operation had been updated since the initial writing of the Principles and it is the opinion of the Trustees that said Principles should be updated. The staff was directed to execute this updating and submit the rough draft to the Trustees for review.

Summary

Reviewing various actions taken during the course of the meeting, it was the opinion of the Trustees that a specific recommendation must go to the Board of Directors concerning action on the revision of the organization chart to include the Research Board. Therefore, the following recommendation, on motion duly made, seconded and carried, was approved by the Trustees:

THAT the Trustees recommend the AFS Board approve the revised organization chart of T&RI with modifications which include the transfer of the Research Board to the T&RI structure.

The next meeting of the Trustees is scheduled for Wednesday, December 11, 1968, at the AFS Technical Center, Des Plaines, Illinois.

Adjournment

The Chairman extended appreciation for the Trustees' participation in this meeting and expressed regrets that it was necessary to adjourn, although he felt that a great deal had been accomplished during this meeting. He stated that it was his full intention to continue with polcy discussion at the December meeting of the Trustees. The current meeting was declared adjourned.

Respectfully submitted,

ASHLEY B. SINNETT
Secretary

Minutes
AFS Training & Research Institute Trustees Meeting

AFS Technical Center, Des Plaines, Ill.—Dec. 11, 1968

Roll Call: Chairman W. Buell (1965-1969), presiding

B. N. Ames (1967-1970)
J. R. Bodine (1967-1971)
J. B. Caine (1966-1970)
J. O'Meara (1968-1971)
C. A. Sanders (1968-1972)
E. F. Tibbetts (1968-1972)

Staff: R. E. Betterley, Director of Education
A. B. Sinnett, Secretary
E. R. May, Treasurer
P. R. Gouwens, Director of Research

Absent: Trustees H. C. Grant (1966-1970), C. A. Johnson (1965-1969), W. W. Levi (1967-1971), C. F. Seelbach, Jr. (1966-1969)

A quorum having been established, the Chairman called the meeting to order, stating the purposes of this meeting were to continue with the efforts of the special Meeting in addition to a mid-year review of all T&RI activity. The special Meeting concerned the development of new policy and philosophy relative to the expansion and further development of the T&RI program.

Approval of Minutes

A motion was entertained for approval of the Minutes of the Special Meeting of the Trustees held September 10, 1968. Upon review, the Minutes were accepted by motion duly made, seconded and carried with a minor change in the fourth paragraph of page 3 concerning the volunteering of a series of handbooks by Trustee Sanders and the American Colloid Company. Rather than a series of handbooks, it should read ". . . a sand course outline."

Report of the Director of Education

For the past six months, 17 programs were presented, 6 of which were regional Chapter courses. Registration reached 390 students with a class average of 23. Contrary to a year ago, this year an Air Pollution Seminar was canceled because of insufficient interest. An originally scheduled die-casting workshop was postponed into the second six months of the fiscal year for the purpose of further investigation of co-sponsoring the course with the cooperative efforts of the Diecasting Association. Attendance for the first half of the fiscal year is noticeably below T&RI history. However, it is anticipated that attendance will increase and conditions will improve before the close of the fiscal period. To date, 256 programs have been presented to close to 8,000 students with an overall class average of 29.3 students per class.

The Apprentice Contest officially opened October 1 and is proceeding on a normal basis. Some local areas are experiencing difficulty due to union problems and company payment of patternmaking apprentices. A special effort was made this year to hold down the average time that would be required for the wood and metal patternmaking problems.

A Design Contest Committee has just been organized and a planning meeting is anticipated at an early date.

Career Guidance Films. Two 35 mm strip films on career opportunities in the metalcasting industry have just about been completed. The first filmstrip which is primarily geared to high school graduates has been received and was reviewed by the Trustees. Film strip #2 is for students seeking a higher education and opportunities with greater responsibilities. This should be available in early 1969. The distribution of the films is gratis to donors, 150 loan copies in the Northeastern University career information center, and the remainder are for sale and for the AFS film library.

The Chapter Educational Activities Liaison Committee is proceeding with a great deal of activity, the first project being the development and refinement of a packaged intensive foundry instructor course to be made available for Chapter use. Currently the programs to be presented in the Milwaukee Technical College for foundry teachers in the Milwaukee area. The first such course was presented during Easter vacation in 1968 with the second such course during the 1968 Christmas holidays. In cooperation with the Milwaukee Technical College, the AFS Wisconsin Chapter and T&RI worked closely in the program. Reports from participants in this course were excellent. It follows an intensive program of how-to-do and laboratory activities. It is anticipated that the outgrowth of this effort will be helpful across the country in teacher training institutions and with state and city vocational education departments. Its benefit will accrue to the foundry industry in that in the survey courses of industrial arts and vocational education more and more young men will become acquainted with the casting processes.

Other projects under consideration by this Committee include: (1) an educational newsletter to AFS Chapter; (2) a weekly or monthly reader directed to industrial art students

of high schools; (3) a project idea file for instructors of cast metals at the high schools including baby cupolas and kits for low melting alloy. It is further anticipated that this Committee will write an in-depth article on "Importance of Secondary School Education to the Industry" or a similar subject. Such material will be distributed to foundry leaders.

T&RI Course curriculum is developing for 1969 and it is anticipated that one new course will be developed and presented each quarter making four new offerings per year. Two new Workshop courses are scheduled for 1969 . . . "Direct Arc Melting—Ferrous Workshop" and "Higher Density Molding—Problem Workshop." Other courses being considered are: "Temperature Measurement for Process Control," "Practical Foundry Quality Control," "Computerization in the Foundry," "Stress in Castings," and "Instrumentation."

Programmed Learning Courses are continuing with two currently in production, "Principles of Physical Metallurgy for Ferrous Castings" and "Principles of Production Metallurgy for Ferrous Castings." Other Programmed Learning Courses as suggested by the Committee include the course on "Basic Sand Technology" or "An Introduction of Metalcasting Production" or a series of melting practice courses including cupola, electric for ferrous, electric for nonferrous and crucible for nonferrous. Further, a cleaning room operation course and a coremaking course are under consideration. The frequency of development and presentation will vary depending on the availability of qualified programming assistance.

An Advance Seminar meeting is planned for early January to develop the program in the broad area of "Systems Engineering." Although this title is not finalized, it will likely follow a curriculum developed along the lines of foundry computer application.

Report of the Treasurer

The Treasurer reported a Statement of Income and Expense for the five months ending November 30, 1968. To date, 17 of the 40 forecasted courses have been conducted and as mentioned earlier tuition fees are down over previous years. However, the general picture of finances for the Institue is being controlled and the only excess expenditure is in the area of promotion in order to stimulate greater attendance at the courses, thus increasing revenues from tuition.

Report of the Director of Research

The Director of Research presented the Minutes of the September Research Board meeting and briefly outlined the various projects in effect. The entire Research program is proceeding on target with anticipated expenditures of $141,766 in projects for fiscal 1968-69.

It was pointed out that a great deal of time during the last meeting was consumed concerning long-range planning for the AFS-T&RI Research Program. The result of their discussions directed the Staff to initiate a preliminary investigation, determine what individuals or agencies might be available to conduct such surveys and to get an approximation of costs. The responsibility of the Research Board in such a program would be to consider all proposals rather than to formulate the program itself. During the discussion, it was pointed out that six new projects have been let during 1968, six projects were continuing from 1967 and four projects were still in effect which were initiated in 1966. A total of sixteen Research Projects are currently being executed by the program of the Institute.

On motion duly made, seconded and carried, the Reports of the Staff Officers were accepted as presented.

Course Attendance

Considerable concern was expressed by the Trustees on the attendance at courses during the first half of the fiscal year. It was pointed out that quarterly mailings have been initiated rather than semiannual and that special ads are being developed in MODERN CASTING to further attendance. In addition, selective mailings are being made to specific audiences which is a feature now possible due to the computerized mailing list. A special effort is going forth to develop better and more Chapter T&RI programs and in doing so, it was the recommendation of the Trustees that the Chapters be surveyed the first of January each year in preparation for the programs of the following Chapter year. This contact with the Chapters should specifically outline the responsibilities of their involvement in such a course and directly solicit a commitment from them at this early date. Following the discussion, motion was duly made, seconded and carried by the Trustees:

> THAT the Director of Education review the program for the balance of fiscal 1968-69 and make whatever changes are necessary to improve the attendance at the courses.

Trustee Actions and Discussion

During the course of the meeting, a discussion evolved on the various textbook analyses made in regard to the courses being offered by T&RI. Full agreement did not prevail on the results of the analysis and the respective Trustees concerned agreed to work directly with the Director of Education in furthering this analysis making its results more effective to the purposes of the courses. The Trustees instructed the Treasurer to give a detailed report on total T&RI income resulting from the two Programmed Learning courses. Further, a breakdown should include the distribution of the income between AFS and T&RI. Also, the particular royalty arrangements between T&RI and Addison-Wesley Corporation.

Review of Governing Priciples

Considerable discussion followed on the updating of the governing principles for operations and procedures of the AFS Training and Research Institute. A suggested revised set of principles was presented to the Trustees and rather than consume the entire time of the meeting on the subject matter, all Trustees were instructed by the Chairman to submit their suggestions to the Staff by January 15th after which all recommendations would be considered, circulated to the Trustees and voted on at their Annual Meeting in June of 1969.

Convention Meeting

Following discussion and by unanimous action, the Trustees agreed not to hold a meeting at the Convention. Time available does not lend itself to holding a constructive meeting. It was the consensus of the group that if additional meeting time was required, special meetings would be called as in this past year.

Policy Discussion

Prior to the closing of meeting, goals for T&RI for the next ten years and further were discussed. Concern was expressed as to where T&RI should be at that time, precisely what type of program could be offered, should T&RI diversify its efforts into management and marketing areas and should consideration be given to in-plant programs such as coordinated video tape offerings. The lateness of the hour prohibited any decisions in these matters; however, all Trustees were instructed by the Chairman to consider this long-range planning and be prepared to discuss it in depth at the next meeting.

Coupled with the long-range planning was a discussion of the various vocational Acts and particularly the Amendment to the 1963 Act as of October 1968. An in-depth review of this Federal Act will be required before any decision can be made as to where AFS and T&RI become active.

Adjournment

The Chairman expressed regret that the meeting had to close and requested all Trustees to actively extend themselves in developing their concepts as to the avenues that T&RI must follow to insure its continuing growth and to be of maximum service to the industry. In doing so, it was suggested that the Trustees not be bound by the operational habits of T&RI during the past 10 years and that possibly the policies existing to date need further scrutiny and revision in order to meet the challenges of our changing industry.

Respectfully submitted,

ASHLEY B. SINNETT
Secretary

Minutes
Meeting of AFS Board of Directors

Kings Bay Yacht Club, Miami, Fla.—February 3-4, 1969

Roll Call: President B. N. Ames, presiding
Vice-President J. O'Meara
Vice-President Elect C. A. Sanders

Directors (1966-69)
A. W. Anderson
G. P. Antonic
M. E. Ginty
L. W. Greenslade
W. O. Larson, Jr.
J. O. Ochsner
M. Reading
C. F. Seelbach, Jr.
E. J. Texler

Directors (1969-70)
J. W. Beckham
F. Coghlin, Jr.
J. E. De Groot
J. B. Essex
E. H. Hill
N. H. Mingledorff
L. Winnings

Directors (1968-71)
S. C. Clow
K. H. Kostenbader
K. D. Millis
F. S. Ryan
P. S. Savage, Jr.
C. Locke (ex officio)

Staff: A. B. Sinnett, Executive Vice-President
P. R. Gouwens, Vice-President-Technology
E. R. May, Vice-Preseident-Finance
W. A. Schaw, Secretary

Guest: R. W. Ruddle, Chairman, AFS Research Board

Absent: Director (1966-1969) J. L. Payne;
Directors (1968-1971) W. L. Mackey, J. Toth

Reading and Approval of Minutes

The President reported that Minutes of the Annual Meeting of the Board, July 25-26, 1968, and Recommendations of the AFS Board of Awards, December 10, 1968, were approved by Letter Ballot. No discussion was forthcoming.

Special Reports

(a) Report of the Chairman, AFS Research Board. The short-range goals of the Research Board have been largely completed: to stimulate and monitor the considerably expanded research program of the Society, with funds increased from $30,000 to over $100,000 annually during this period. As a result of the Board's activities, 16 research projects have been completed since 1965-66. Now the Research Board will increasingly direct a greater proportion of its activity to areas of long-range planning.

Among the long-range goals reported by the Research Board:

(1) That a more effective communication be developed between the Board and AFS technical groups and divisions. Most research proposals originate outside these groups and divisions although written requests for guidance have been made to division chairmen. It was recommended that personal contact on a regular basis by the Research Board with division chairmen will increase the participation of the divisions in the Society's research program.

(2) That the Society be aware of research projects both in progress and anticipated by other technical organizations throughout the world. A worldwide survey of research is now being conducted toward this objective. This activity parallels the Research Board's current communications with the trade associations of the United States in avoiding duplication of research expenditures.

(3) That a systematic approach be applied by the Research Board to identify basic gaps in the technology of the casting process. An exhibit was presented of the processes and their inter-relationship within small segmented process area. A survey of each area is expected to define the most significant gaps requiring AFS research in either the origin or development of each process. Reports from the AFS technical divisions will be requested by the Research Board in identifying these gaps.

The AFS Director of Research submitted the research report. Current research includes 13 separate contracts committed for a total of $97,348. It is anticipated that the total available funds of $141,766 will be committed before the conclusion of the 1968-69 fiscal year. The fund includes $600 of the Research Patrons dues plus $100,000 of new funds from AFS and a contribution by the International Copper Research Association in the amount of $7,067 for a jointly-funded project.

Communicating research results to the membership and industry was discussed and it was specifically recommended that all Corporate members of the Society receive a synopsis of research reports in process as well as an updated listing of available research reports.

(b) Technical Council Activities. It was reported that most of the 97 technical committees of AFS responsible to the Technical Council functioned throughout the first six months of the fiscal year. The Malleable Iron Division has added a new committee, Malleable Sand Systems Control, and two additional committees are being considered, one on Ferrous Permanent Mold and Die Casting as part of the Related Interests Division, and the other on Slurry Systems within the Molding Methods & Materials Group.

The AFS Technical Council noted that it has not adequately functioned as a governing and policy-making group. Cited as causes were a rapid turnover of personnel, informal reporting, and limited duration of meetings which have been held one day each year. In the future, the Council intends to hold at least two two-day meetings per year, and formalize the method of reporting by the technical groups, permitting more time for consideration of policy questions and long-range development of technical committee activities.

(C) Final Report of Technical Communications Appraisal Committee. The report was presented and reviewed by the Board in detail, and action taken as follows on the committee's recommendations:

I. **Special Pamphlet:** That future funds be provided as approved by the Board to development-of-the-art reports by recognized experts in the field. These funds will be requested within the Publications budget.

II. **Technical Committee Personnel Roster:** That staff action already in progress be continued to clarify technical policies and organizational structure within the Personnel Roster.

IV. **Casting Congress:** That the current policy of abstract deadlines prior to December 1 be continued. However, the Vice-President—Technology retains the authority to include additional presentations in the Casting Congress program.

VII. **MODERN CASTING:** That increased orientation be given to practical "how to" editorial, and news stories be developed for both follow-up of AFS technical papers and new technology as published in the Cast Metals Research Journal.

> On motion duly made, seconded and carried, the above recommendations were approved as presented. In addition, Board action on the remainder of the report's recommendation was as follows:

The third item, Research Reports, required no action since the committee's recommendation was in full support of current policy.

V. **Cast Metals Research Journal:** That a reader interest survey be made in order to possibly assist in broadening existing editorial policies to include applied research; that applications of new technology be published if the papers satisfy the

Journal's criteria, and that the broadening of CMRJ policies would increase its value to the membership as the focal point of casting research.

A survey is currently being staff conducted to determine why non-renewal of subscriptions have occurred for the Journal and evaluate the recommendation for broadening its editorial policies for the next few years. It was further suggested that the Editorial Board should be fully apprised of the committee's recommendations affecting editorial content.

It was duly moved, seconded and carried that this item be deferred until the next meeting of the AFS Board of Directors and that a report to the Board be made on comments by the Editorial Board, and of the survey of subscribers.

VI. **TRANSACTIONS:** That a separate Editorial Review Board be established to be available to the technical staff when needed to help determine proper allocation of papers for the Cast Metals Research Journal, for MODERN CASTING, and for TRANSACTIONS; also those not to be published.

It was further commented that if the scope of the Cast Metals Research Journal is broadened and as MODERN CASTING increases editorial of practical application, that TRANSACTIONS per se may be eliminated or greatly reduced.

Discussion of the recommendation pointed out that a second review of papers by the Cast Metals Research Journal Editorial Board represents a double review of all Casting Congress papers and that the decision for publication in TRANSACTIONS is properly directed through the Program & Papers committees of the AFS technical divisions. If a technical paper is accepted by these committees, it should be published.

A motion to accept recommendation VI las duly voted and rejected by the Board.

A motion was duly made in reference to the recommendation that present policy be reaffirmed. The motion was amended to include authorization for the Vice-President—Technology to appoint a Board of Review for technical papers previously approved by Program and Paper committees for the Annual Casting Congress. Appointments will be made to the Board for 2-year terms by the Vice-President—Technology subject to the approval of the AFS President.

The amendment and original motion to reaffirm policy were duly voted and carried.

This being the final report of the AFS Evaluation Committee for Technical Communications, its activities and purpose were considered as concluded.

(d) Final Report of SH&AP Program Planning Committee. Formed to assure long-range planning for the Society's SH&AP program during the next five years, the committee reported action on four recommendations contained in the previous interim report: The employment of an additional staff member for the SH&AP department, approval of joint research with the U.S. Department of Health, Education and Welfare, establishment of a Steering Committee to advise and assist the SH&AP staff, and a proposal to the National Castings Council for Washington, D.C. representation to the industry in SH&AP areas.

In addition, action has also been taken to establish AFS recommended standard procedure for testing effluent from cupolas, a survey by the U.S. Department of Commerce to determine the economic effects of air pollution laws on the industry, and the publication of a bi-monthly report on pollution and environmental control to top management. This latter publication has already begun, CONTROL NEWS, sponsored jointly by AFS and GDIFS.

Recommendations of the committee were presented in four specific areas:

I. **Legislation and Liaison:** That AFS continue to direct the combined efforts of foundrymen in those states and communities where legislative action is underway or probable, and the establishment of regular communication system with industry groups in areas where legislation is in effect.

II. **Research & Development:** That the SH&AP committee of the Society develop and maintain a roster of priorities for research and development program and that such programs be conducted independently or in conjunction with others, including the U.S. Government.

III. **Engineering Services.** That AFS continues its present engineering services and consider additional services as needed by the industry. The committee specifically recommends investigation of the feasibility of a testing service by SH&AP with suitable fees to support it.

IV. **Communication & Publications:** That AFS continue to execute its responsibility for keeping the industry informed both generally and technically about SH&AP matters through printed mediums, public hearings, and AFS-T&RI meetings and Seminars.

It was duly moved and seconded that the Planning Committee's final report be accepted and that the Committee's assignment be terminated. The motion was duly voted and carried.

A resolution of commendation for the Committee's activity and report was duly made, seconded and approved.

Reports of Staff Officers

(A) Vice-President—Technology. The Casting Congress program was initiated with the technical committees responsible for programming last July 1, an earlier date than ever before. However, difficulty has occurred in obtaining final manuscripts of technical papers probably due to current business conditions, and a total of 75 are anticipated by the Congress on May 5-9. Since discussion indicated that the availability of technical papers is more critical in a non-Show year, it was suggested that deadline requirements be rigidly enforced in Exposition years and late papers deferred to the non-Exposition year.

The 1969 Charles Edgar Hoyt Lecture for the Congress has been selected by the Honorary Lecture Committee as J. W. Meier, on the subject, "Nonferrous Metals—Past and Future." The 1970 Hoyt Lecturer has also been selected as AFS Past President Warren C. Jeffery, on a subject of his choosing. In addition, the 3rd World Lecture and the Silver Anniversary Paper, selected by the Molding Methods & Materials Group, will be presented at the 1969 Congress.

On Monday and Thursday of the Congress, the special Operating Sessions will be repeated. The operating session topic will be "An Appraisal of Modern Coremaking Practices."

The Official Delegates to the 35th International Foundry Congress in Kyoto, Japan, were AFS Past President N. J. Dunbeck and Vice-President—Technology Paul Gouwens. The Official Exchange Paper from the U.S. was presented by Prof. Carl R. Loper, Jr., and the Technical Communication was offered by Charles F. Knight.

The 36th International Foundry Congress will be held in Belgrade, Yugoslavia, from Sept. 7-14, 1969. The Official Exchange Paper will be submitted by R. Polich, Bendix Corporation, and the Technical Communication by A. Dorfmueller, Jr., of Ashland Chemical Company. In 1972, the International Foundry Congress will be held in Philadelphia during the AFS Casting Congress and Exposition.

It was announced that the Society will sponsor an Electric Ironmelting Conference on Nov. 18-20, 1969 at Michigan State University, East Lansing, Mich. This Conference is designed to establish a public forum on the production of high carbon metals by foundries who utilize electric melting or are considering such melting facilities. Registration will be restricted to 375 persons and a registration fee of $150 will underwrite costs of the activity.

Library Information services during 1968 received requests from 682 companies and resulted in 2,485 articles with 16,005 pages being selectively retrieved by problem or interest area. The continued development of the Document Retrieval program has included installation of microfilming equipment. A conversion to microfilming is now in process for manuscripts and data going back to 1960.

The Current Awareness Service of informative, in-depth abstracts is now in its second year. The number of subscriptions reached a peak of over 200 and re-subscription is currently underway.

(b) Vice-President—Finance. The report was supported by itemized Income & Expense Statements for the 6-month period, the Balance Sheet as of Jan. 1, 1969, and the Comparative Operating Statement of Income & Expense for six months. The membership campaign produced income over forecast of $4,570, while a decline in income forecasted for

MODERN CASTING was offset by a commensurate decline in expenses.

It was requested that an inventory policy be established for AFS Publications, and that a program for publishing a new edition of the Cast Metals Handbook be presented to the Board at the July, 1969 meeting.

(c) Report of the Secretary. A record membership activity through the first six months of the fiscal year directly reflected the general and Corporate membership campaigns. A total of 1,254 members of all classifications and 33 new Corporate members were entered since July 1. Offsetting these gains were 1,260 drops for non-payment of dues, 125 resignations, and 24 deaths. The net gain for six months of 164 resulted in a total active membership of 13,899 as of January 1, 1969.

The general membership campaign, involving the book bonus for new members and the Chapter Sweepstakes contest, has been largely credited for the increase of individual members by a majority of Chapters. The campaign has now been focused on the problem of drops due to non-payment of dues. The re-entry of delinquent drops remains the Society's most critical membership problem and handicap to substantial growth.

The Corporate membership campaign involving the AFS Board of Directors was directly responsible for a sharp increase in new company, Sustaining and Research Patron members. This activity is occurring in a year when due to the dues increase, serious losses were otherwise projected.

It is expected that the Corporate membership campaign will be expanded in 1969-70 to reach a larger number of prospects within the industry and involve the AFS Alumni as an expanded group for personal contact solicitation.

(d) Report of Executive Vice-President. The increasing effect of mergers and conglomerates has created a serious problem both in numbers of corporations participating in the Society and in Society income. The significance of the AFS Board of Directors and Board Management/Membership Committee in corporate contacts was emphasized, particularly in view of the additional and upgraded Corporate support necessary to the Society's financial well-being in view of these mergers.

The Technical Communications Department continued to have MODERN CASTING as its largest single activity. A major change in the magazine was initiated in January, 1969, when the format and arrangement of material were completely revitalized to create a more professional, commercial publication. Its new, modern appearance is the result of six-month's planning by staff with a team of publishing consultants. Advertising pages for the first six months have been 9% below the prior year, a decline paralleled industry-wide.

Publication sales remain comparable to the same period a year ago. A new publishing activity is being created to fill the technical information gap at the operations level, from foreman through superintendent. The activity includes a series of shop books or handbooks which will be "state-of-the-art books" featuring narrow subject areas as shell molding, core making, and casting defects, and corresponding in size to the popular pocketbooks seen on newsstands.

The Cast Metals Research Journal has been able to contain about twice as many articles because of a new editorial policy condensing all non-original papers as much as 50%. This policy permits coverage of a greater variety of subjects, representation from more countries, and a wider variety of interest areas within the same number of total pages.

The AFS in-house computer program has been carried out precisely as forecasted. Conversions have been completed on schedule for all membership processing, MODERN CASTING subscription fulfillment, and MODERN CASTING Reader Service Program. The next step, currently in development, is the conversion of various small lists which have been maintained by the Society on an Addressograph system. Following the Addressograph conversion will be an immediate programming of a document retrieval system.

The Society was successful in obtaining William Huelsen as Assistant Director of the SH&AP program. He will join the staff March 1, and comes to AFS with excellent experience in in-plant engineering and environmental control.

In review of the overall program of the Society's operations, it was reported that certain specific staff individuals must be added if the Society's growth is to continue. No additional staff other than the Technical Department have been added to the Society in the past 5 years. During this time the program of activity has practically doubled.

Two specific individuals were immediately recommended for the Finance Committee and Board to consider in establishing a budget for 1969-70—(1) A Convention and Meetings Manager who will permit considerably more time in personal field contact with the membership by the Secretary and Executive Vice-President, (2) a Promotion Coordinator who will have the responsibility of handling all of the printing, writing, and coordination of promotion activities of the Society. In this latter position, it is believed that the coordination of effective promotion will have a definite effect on membership, Research Journal and Current Awareness subscriptions, T&RI enrollment, and MODERN CASTING advertising.

Reports of Board Committees

(a) Honorary Lecture Committee. This Committee has the responsibility of appointing the Hoyt Lecturer and the AFS World Lecturer for each Convention. For 1969, the Hoyt Lecture will be presented by J. W. Meier of the Canadian Department of Energy, Mines and Resources on the subject, "Nonferrous Metals—Past and Future."

The 3rd World Lecture will be delivered at the Congress by a representative of the Association Technique de Fonderie of France. The topic is tentatively "Permanent Mold Heat Transfer Problems."

(b) Chapter Contacts Committee. Vice-President O'Meara reported that all but two contacts had been made and that both remaining contacts had been scheduled. The Directors were complimented for completing their contacts on time. It was suggested that a Director's home Chapter should be contacted by some other Director to enhance prestige. The Vice-President stated that a Director may indicate his preference when Chapter contact assignments are made and such requests will be incorporated. The Directors were also commended on excellent Management/Membership activity, conducted in conjunction with their contacts.

(c) Report of F.E.F. Trustees. Director De Groot presented a report on behalf of Director Payne on the F.E.F. meeting held at the University of Wisconsin at Madison. F.E.F. continues to be most effective for the industry through continual grants of scholarships to capable young men. Three new universities have been added to the program, Oregon State at Corvallis; Tennessee Technological Institute at Cookeville; and Wisconsin State at Platteville.

A discussion followed of AFS Student Chapter activity and the recruitment of additional students into the industry through these Chapters. It was recommended that AFS present the Faculty Advisor of each Student Chapter with a free subscription to the AFS Current Awareness Service.

On motion duly made, seconded and carried, the staff was directed to initiate the free subscription proposal.

(d) Nominating Committee Report. Past President Seelbach, Chairman of the 1968 Nominating Committee, reported on Board of Director candidates nominated by the membership at the December 9 meeting. The following candidates will be nominated for election at the Annual Business Meeting of the Society, May 7, 1969:

President

John O'Meara, Senior Vice-President, Banner Iron Works, St. Louis, Missouri.

Vice-President

Clyde A. Sanders, President, American Colloid Company, Skokie, Illinois.

Directors

Arthur Avedisian, Vice-President Research, Taylor & Fenn Company, Windsor, Connecticut—Region 1, Chapter Group "A", Connecticut Chapter—rep. Gray Iron.

Charles H. Cousineau, President, L. C. Refractories & Supply Company, Muskegon, Michigan—Region 4, Chapter Group "I", Western Michigan Chapter—rep. Supplies.

Robert Gray, Sales Manager, Don Barnes Limited, Hamilton, Ontario, Canada—Region 2, Chapter Group "D", Ontario Chapter—rep. Supplies.

Edwin S. Lawrence, Plant Manager, General Electric Com-

pany, Elmira, New York—Region 2, Chapter Group "C", Penn-York Chapter—rep. Gray Iron, Ductile.

A. H. Renfrow, President, Renfrow Foundry, Los Angeles, California—Region 7, Chapter Group "Q", Southern California, rep. Gray Iron.

Dr. Harold W. Ruf, Vice-President, Grede Foundries, Inc., Milwaukee, Wisconsin—Region 5, Chapter Group "L", Wisconsin Chapter—rep. Gray Iron, Ductile.

(e) Board Nominating Committee Report. Vice-President O'Meara, Chairman of the Board Nominating Committee, reported on the following recommendations of the Committee:

(a) Director-at-Large, for a 3-year term (1969-1972)
John R. Ikner, Manager, Chevrolet-Saginaw Foundry Div., General Motors Corp., Saginaw, Michigan.

(b) Two T&RI Trustees, each for a 4-year term (1969-1973)
Charles Stull, President, Pelton Steel Castings Co., Milwaukee, Wisconsin.
Newton N. Sacks, Manager of Material Engineering, Deere & Co., Moline, Illinois.

(c) F.E.F. Trustee, for 2-year term (1969-1971)
Karl Kostenbader, Supt. of Foundries, Bethlehem Steel, Bethlehem, Pennsylvania.

(d) AFS Retirement Fund Trustee, for a 4-year term (1969-1973)
George R. Frye, General Manager, Eaton Foundry Div., Eaton, Yale & Towne, Inc., Vassar, Michigan.
It was moved, seconded and unanimously approved that these nominees be elected and that Director Walter O. Larson be elected to the vacancy of Vice-President Elect Sanders to the T&RI Trustees.

Report on Training & Research Institute

The minutes of the December 11 meeting of the Trustees were presented and discussed. Concern was expressed by the Trustees on the attendance at courses during the first half of the fiscal year. For the first six months, 17 programs had been presented with registration of 390 students and a class average of 23. This is below the overall average of 29.3 students per class since the program was initiated in 1958. It was anticipated, however, that the initiation of quarterly mailings, selected computer mailings, increased Chapter T&RI programs, and advertising in MODERN CASTING will result in increased attendance during the balance of 1968-69.

It was reported at the meeting that two 35mm film strips on Career Opportunities in the metalcasting industry were near completion. Copies of the film will be available from the AFS film library for distribution to Chapters. The Chapter Educational Activities Liaison Committee is continuing to refine a packaged intensive foundry instructor course available for Chapter use. Currently the programs are being presented at the Milwaukee Technical College for foundry teachers in the Milwaukee area.

Other projects under consideration by this Liaison Committee include: (1) an educational newsletter to AFS Chapters, (2) a weekly or monthly reader directed to high school industrial arts students and (3) instruction kits including a baby cupola as teaching aids for cast metals at the high school level.

The T&RI Trusteee Chairman requested that the Society and T&RI investigate increased liaison with vocational education at the state governmental level. He reported that vocational training centers are now being planned and that T&RI become involved with these centers wherever possible. Motion was duly made, seconded and approved to accept the Chairman's request.

In conjunction with Chapter educational activities at the vocational student level, it was moved, seconded and duly approved that the Society provide the Cast Metals Handbook now in inventory to AFS Chapters at $2.50 per copy for distribution within the Chapter to students and trainees in the industry. The motion was moved, seconded, and unanimously adopted.

Also reported were the Sept. 10 minutes of a special Trustee's meeting, called to discuss existing policies and governing principles of T&RI. Specific recommendations included:

> THAT the AFS Board approve a revised organization chart of T&RI with modifications to include the transfer of the Research Board to the T&RI structure.

It was recommended by the AFS Board that the staff develop this proposal in detail, with an accompanying organization chart, prior to the May Board of Directors meeting.

The Statement of Income and Expense ending November 30 indicated that although course enrollment is down, finances for the Institute are being controlled. The only expenditure in excess of forecast is in the area of promotion in order to stimulate greater course attendance.

Recommendations of Finance Committee

The President reviewed the minutes of the Finance Committee held December 10, 1968. It was noted that items within the report had been previously discussed except for the Exhibit Management contract. Parameters for a revised contract had been discussed, written and accepted by the Martin C. Dwyer organization.

Recommendations of the Executive Committee

The President reported that the Executive Committee had reviewed a total of five recommendations and nine suggestions for staff action resulting from Regional Administration Meetings held in the fall of 1968. Among the recommendations requiring Board action and discussion were:

(1) That the staff be directed to develop proposals for Company membership plaques to be either sand or diecast at the approximate cost of $5.00 each for distribution to all Company members of the Society. This recommendation was duly moved, seconded and carried, and a report requested for the next Board meeting.

(2) That the T&RI Trustees consider development of low-cost evening or one-day courses of a practical nature that can be presented by local Chapters. The format and content will be organized by T&RI, but the conduct of the course will be the Chapter's responsibility. The recommendation was duly moved, seconded and carried.

Further recommendations and suggestions included the activation of the Chapter Technical Liaison Chairman in a communication program directed by the AFS Vice-President —Technology; that the Society develop a communication outlining the duties of Chapter officers and Society Directors for the information of both prospective candidates and their employers; that a listing of specific privileges for each classification of Corporate membership be developed and forwarded to all Society Directors, Chapter Chairmen, and Membership Chairmen, and that additional speaker assistance be given by the AFS Technical Staff to all Chapters.

Announcement of Next Board Meeting

The President announced that the next meeting of the Board of Directors will be at the Stouffer's Inn, Cincinnati, on Sunday, May 4, at 11:30 am. Both incumbent and Directors-Elect were requested to attend the luncheon and meeting.

Adjournment

There being no further business to be considered, the meeting was declared adjourned.

Respectfully submitted,

WALTER A. SCHAW
Secretary

Minutes
AFS Technical Council Meeting

AFS Technical Center, Des Plaines, Ill.—April 8, 1969

ROLL CALL: W. W. Levi, Chairman
A. W. Bardeen, Vice-Chairman
B. N. Ames, President, AFS
C. F. Joseph
R. W. McIlvaine (for D. J. Gentile)
F. L. Riddell
R. W. Ruddle
G. J. Vingas (for C. A. Sanders)

AFS STAFF: R. E. Betterley, Director of Education, AFS-T&RI
M. T. Rowley, Technical Director-Nonferrous, AFS
G. X. Diamond, Assoc. Editor, MODERN CASTING (for G. A. Colligan)

GUESTS: A. B. Sinnett, Executive Vice-President, AFS
R. L. Doelman
E. C. Troy

ABSENT: G. A. Colligan
D. J. Gentile
C. A. Sanders
H. H. Wilder
P. R. Gouwens, Vice President-Technology, AFS

The minutes of the July 2, 1968 meeting of the Technical Council were approved as distributed.

Verbal Highlights of Formal Reports

Formal reports were received from the following prior to the meeting:

Research Board
Cast Metals Research Journal Editorial Board
AFS Training & Research Institute
Engineering & Design Group

These were distributed to all members at the time of the meeting announcement.

The following formal reports were distributed at the meeting:

Nonferrous Metals Group
Molding Methods & Materials Group

No formal reports were submitted by the Ferrous Metals Group nor by the Honorary Papers and Honorary Lecture Committees.

a. Ruddle reported that during fiscal 1968-1969 the Research Board had authorized no new projects, had terminated four and renewed five. He stated that there was currently an uncommitted balance of $44,418 in research funds which would, however, undoubtedly be allocated prior to July 1, 1969.
To promote better liaison with Divisions, the Board plans to invite Chairmen or other Divisional representatives to attend Research Board meetings on a rotational system. This will familiarize each Division with what the Board requires for approval of research and will also afford each Division an opportunity to express its long-range plans.
Clarence Sims has been retained as a consultant to assist the Research Director in surveying the state-of-the-art and need for long-range plans in various areas of foundry technology.

b. Diamond reported the activities of the CMRJ Editorial Board for Colligan.
On subscriptions, a survey has shown that most "drops" are due to changes of address and deaths. It was estimated that we have only about one-third of the potential subscribers. Diamond raised the question of whether current interest reflected a real need for CMRJ.
The consensus of the Council was that a real need does exist and that publications was warranted even if the cost of CMRJ must continue to be subsidized by AFS. The suggestion was made that student members be given subscriptions at reduced rates, beginning at FEF schools. There is a possibility that at a later date we may wish to consider merging CMRJ and TRANSACTIONS in a "quarterly" publication. The latter idea should be reviewed by Gouwens.
Vingas suggested that CMRJ publish Sim's survey of the state-of-the-art, with emphasis on how to use the CMRJ.
The Council directed the CMRJ Editorial Board to formulate specific recommendations for future activity in circulation and publication.

c. Reporting for the Ferrous Group, Joseph said that the Steel Division continues to be almost inactive, except for the Congress Program. The Division will require a completely new slate of executive officers, since the current Vice-Chairman does not wish to accept the chairmanship.
The Malleable Division has shown limited activity in number of meetings. A new committee (6-F) has been formed to study production control problems of malleable sand systems.
Both the Ductile and the Gray Iron Divisions have been active, particularly in Congress programming, where an increasing number of joint technical sessions and shop courses are being planned.
The principal activity in the Related Interests Division has been in Heat Transfer Committee (14-C) work and in activities of the Induction Furnace Committee (14-D) and the Melting Methods Committee (14-E). Plans are being made for an Electric Ironmelting Conference in November 1969, and the latter two committees are assisting in its organization.

d. The formal report of the Nonferrous Metals Group was submitted and read in its entirety by Riddell. This report is appended, as part of the minutes of the meeting.

e. McIlvaine reported on activities of the Engineering and Design Group, which were highlighted as follows:
(1) A Computer Applications Committee has been formed and plans to sponsor a session at the Cincinnati Congress.
(2) The Safety Committee has been reactivated.
(3) The Air Pollution Control Manual, written by the Air Pollution Committee, is completed and available. The committee is currently working with consultants and other groups to develop standards for cupola stack sampling.
(4) The Plant Engineering Division is planning another Round Table Luncheon, with experienced users of air pollution control equipment available for interview by the attendees at the luncheon. This programming technique is recommended to other Divisions.
(5) The Pattern Division continues to find it difficult to obtain competent qualified authors of Congress papers. The Division is actively seeking new members.
(6) The Casting Design Division feels that more should be done to promulgate the principles of casting design to

design engineers. It was suggested that this might be done cooperatively with other technical societies such as S.A.E., A.S.T.M.E., etc. through their publications, shows, and meetings. The Council felt that AFS should not attempt to develop more design manuals since these are amply provided by the foundry trade societies.

f. A formal report of activities of the Molding Methods & Materials Group was submitted by Vingas (copy enclosed with minutes).
All but one of the fourteen committees has been active in programming, updating standards and procedures, revising existing publications, compiling production data, monitoring research, etc.
Seven of the eighteen papers at the next Congress are the direct or indirect result of committee activity.
A research committee is now active and maintains close liaison with the other Group committees. Two research projects, sponsored by the Basic Concepts Committee, have just been concluded. The Group is recommending a new research project on the subject of "water explosion as a cause of casting defects," with the suggestion that the work be done by 1968 Howard Taylor Award winners Levelink and van den Berg of Holland.

g. Betterley reported on AFS-T&RI activities. There has been some drop-off in course attendance, possibly due to shortages of key personnel. Work continues in the development of new course topics and additional programmed learning books.
Special programs have been presented at schools and universities, including both instructors' seminars and course work for graduate and undergraduate credit.
Formal texts are planned for several of the more popular courses and the first, "Basic Sand Technology," is nearing completion.
Joseph questioned whether T&RI should not develop a program to make foundry courses available to South American countries. Sinnett pointed out that cooperation and interest from Latin American countries (Mexico excepted) has been poor.
T&RI is sponsoring a Congress session in May on "Plant Protection" and is conducting an advanced seminar on "Computer Control and Systems Engineering Applied to the Metalcasting Industry" in June.

h. Bardeen reported that the Honorary Papers Committee had selected the paper, "Water Explosion as a Cause of Casting Defects," by Levelink and van den Berg as the 1968 Howard Taylor Award winner.
The Honorary Lecture Committee, comprised of the five most recent Charles Edgar Hoyt Memorial Lecturers, does not function effectively due to poor attendance at meetings, even though held only once per year. Bardeen recommends some changes in committee structure.
J. W. Meier has been chosen as the 1969 Hoyt Lecturer and W. C. Jeffery for 1970. Both men have accepted, I.C.H. Hughes of B.C.I.R.A. will give the World Lecture at a later date when France could not provide a speaker because of financial problems. Polich of Bendix Corp. could not fulfill his commitment to present the official U.S. exchange paper at I.C.F.T.A. in Belgrade this year, so the paper by Dorfmueller and Schafer was substituted. There will be no technical communications from the U.S. this year.
The 1972 AFS Casting Congress in Philadelphia will also be the International Congress. A brochure is being prepared for publicity purposes.

Old Business

Rowley reviewed the agreement reached by the Council at the July 2, 1968 meeting, that first priority be given to topics related to technical planning and policymaking. It was agreed that, in the present meeting, too much time had again been taken in the reporting of activities. In the future, all reporting individuals are to make a special effort to submit written reports well in advance of the Technical Council meeting. It was also suggested that future meetings either be scheduled (1) for two full days, or (2) as an evening dinner meeting followed the next day by a morning session.

a. The questions of reappraising the tenure of Technical Council members and the reorganization of technical committee structure were referred to a task committee comprised of Levi, Bardeen and Ruddle. This committee is to prepare specific recommendations for consideration at the next Council meeting.

b. Planning details of the Electric Ironmelting Conference (November 1969) were reviewed by Rowley.

New Business

a. Gouwens proposed that we revise our policy regarding the World Lecturer, whereby the foreign society providing the speaker is required to defray his expenses in the amount of $1000. This has created financial problems (e.g, France, this year) which might be avoided if the remuneration were not required. (AFS would continue to finance its own speaker, however.)
Various solutions are possible, ranging from no stipulation of reimbursement to complete reversal of arrangements (i.e., AFS to finance foreign speaker and vice versa).
The consensus of the Council was that Gouwens contact the foreign societies to determine what alternate arrangements would be satisfactory to them, and then submit a definite proposal.

b. A survey of other technical societies showed mixed policy so far as publication of trade names in technical articles was concerned. The Council recommends AFS continue its present policy in this regard.

c. Present policy is that absolute authority for acceptance of Casting Congress papers (AFS research reports and technical committee reports excepted) rests with Divisional Program & Papers Committees. In the past, some papers approved by Program & Papers Committees have been judged by the Staff to be substandard. Where such doubt as to acceptability exists, it is recommended that an anonymous "appeal" committee have the authority for final judgment.
The Technical Council approved, in principle, the selection of three of its members, anonymously, to act as a review committee in such cases. It was recommended that this procedure be submitted to the AFS Board of Directors for its comments and approval.

d. Ames and Sinnett described the reasons for assignment of the Research Board, in its accountability, to the T&RI Trustees so far as research funding is concerned. It was emphasized that T&RI should also consider the acquisition of research grants from sources other than AFS.
The Chairman of the Research Board will continue his membership in the Technical Council.

e. In view of early departure schedules for a majority of the Council members, the remaining items of new business on the agenda were deferred until the next meeting.

Meeting adjourned.

Respectfully submitted,

MERVIN T. ROWLEY
Acting Secretary,

Annual Report of Nonferrous Metals Group

1968-1969

The Nonferrous Metals Group consists of the Brass & Bronze Division and the Light and Reactive Metals Division.

Brass & Bronze Division

At the 1968 Convention in Cleveland, the Brass & Bronze Division held three technical sessions where six papers were presented, a Round Table Luncheon, and a Shop Course. In addition, a joint session was held with the Light and Reactive Metals Division where the progress reports on the two Divisions research projects were presented. Also, at this joint session an exceptional film on metal flow was presented by Don LaVelle.

At the 1969 Convention in Cincinnati, the Brass & Bronze Division will have three technical sessions with seven papers being presented, a Round Table Luncheon and a Shop Course. At a recent meeting of the Executive Committee of the Division, the members let their feelings be known about the scheduling of all the Brass and Bronze Division activities on one day. Active participants in the Division program may be involved from 8:00 am to 10:00 pm on Monday, May 5, 1969. This is entirely too long and it is hoped that in future years the program can be extended to two days as it was in the past.

The research project at the University of Wisconsin will be reported on in two progress reports at the 1969 Convention. At a recent meeting of the Research Committee, it was recommended that the Research Board continue the research. Work has been concentrated only on the narrow solidification range alloy (manganese bronze) and nothing on the wide solidification range alloy (85-5-5-5).

Light and Reactive Metals Division

At the 1968 Convention in Cleveland, the Division held four technical sessions where eleven papers were presented and a Round Table Luncheon. As previously mentioned, a joint session with the Brass & Bronze Division was held.

At the 1969 Convention in Cincinnati, the Division will have five technical sessions with thirteen papers being presented and a Round Table Luncheon. The program is extended over three days. The research project at the University of Bridgeport will be presented.

The Research Committee of the Division has expressed some concern over the lack of coordination and liaison with the researchers at the University of Bridgeport and the committee. It is hoped that the liaison recommendations of the Research Board will help to alleviate this feeling in the future. Since the research at the University of Bridgeport has been terminated, the Research Committee will have to prepare a new proposal and submit it to the Research Board.

The program at the 1969 Convention is so arranged that there is as little as possible conflict between the two Divisions regarding session schedules. Since many of the foundries in the two Divisions pour both aluminum and copper base alloys, it is hoped that the scheduling of meetings of both Divisions be done on the same manner in future years. The Round Table Luncheons of the two Divisions should always be scheduled on different days.

Kenneth E. Nelson of the Dow Chemical Company will be the new Chairman and Charles W. Ward of Benjamin Harris & Company will be the new Vice-Chairman of the Nonferrous Metals Group.

Respectfully submitted,

Fred L. Riddell
Chairman, Nonferrous Metals Group

Minutes
Final Meeting AFS Board of Directors 1968-69

Stouffer's Inn, Cincinnati—May 4, 1969

Roll Call: President B. N. Ames, presiding
Vice-President J. O'Meara
Vice-President Elect C. A. Sanders

Directors (1966-69)
*A. W. Anderson
*M. E. Ginty
*W. O. Larson
*J. O. Ochsner
J. L. Payne
M. Reading
C. F. Seelbach, Jr.
E. J. Texler

Directors (1967-70)
*J. W. Beckham
F. Coghlin, Jr.
J. E. De Groot
*J. B. Essex
E. H. Hill
N. H. Mingledorff
L. Winings

Directors (1968-71)
S. C. Clow
K. H. Kostenbader
W. L. Mackey
K. D. Millis
F. S. Ryan
P. S. Savage, Jr.
J. Toth

(* Denotes Regional Vice-President)

New Directors (1969-1972)—as Observers
A. Avedisian
C. H. Cousineau
R. S. M. Gray
E. S. Lawrence
A. H. Renfrow
H. W. Ruf

Staff Officers: A. B. Sinnett, Executive Vice-President
M. T. Rowley, Technical Director—Nonferrous
E. R. May, Vice-President—Finance
W. A. Schaw, Secretary

Absent: Directors G. P. Antonic (1966-69), L. W. Greenslade (1966-69), C. Locke (ex officio, 1968-71); Director-Elect J. R. Ikner (1968-72); Vice-President-Technology P. R. Gouwens

A quorum having been established, the President welcomed the newly-elected Directors and invited all to participate in the Board discussion.

Reading and Approval of Minutes

Minutes of the Board Meeting held February 3-4, 1969, had been approved by Letter Ballot. There being no discussion, the President proceeded with the Agenda.

Report of the Secretary

Membership activity in the fiscal year through March resulted in a net gain of 433 members, including a 255-member gain in the final month (March) of the 1968-69 membership campaign. Total membership was 14,168 as of March 31st.

Special efforts to regain members dropped for non-payment of dues began showing results in February and March, and were expected to continue. The recovery of drops remained the area requiring chapter improvement and Central Office emphasis.

Corporate membership activity continued as forecasted, with a net gain of seven Research Patron Members Sustaining one less, and Company Members holding even. Substantial new and upgrading activity by the chapters and Society Directors have offset anticipated losses due to the corporate dues increase.

The fiscal year is expected to close with a moderate monthly decline in net total membership by June 30, remaining over 14,000. Corporate membership is forecasted to close at approximately current levels.

New Chapter Section interest has been expressed by members in the Alberta, Canada and Waterloo, Iowa areas. Both will be surveyed for potential activity by the Central Office staff. The Wichita, Kansas section of the Mo-Kan Chapter has successfully concluded its second year and is being considered for full chapter status in the 1969-1970 chapter year.

Report of Vice-President—Finance

The finances of the Society continued to indicate a net fiscal deficit in excess of forecast, as reported previously at the February Board Meeting. MODERN CASTING particularly reported income below forecast, reflecting a general decline in industrial advertising during 1968-69. MODERN CASTING expense included a "new image" program essential to the long-range development of the publication's market potential.

The President noted that, on a cash-flow basis, the year-end fiscal condition of the Society will equalize to balance with the forecast deficit.

Report of Executive Vice-President

The 1969 Casting Congress is expected to be one of the Society's most successful, based on a record advance registration of over 1,000. A new computerized advance registration system was credited in part for this record activity.

The 1970 Casting Congress and Exposition will be held on April 6-10 in Cleveland, Ohio. Announcements, contracts, and floor plans are being forwarded to all 1968 exhibitors, in advance of general promotion. Approximately 120,000 ft. of exhibit space have been laid out, an increase of 17,000 sq. ft. over 1968. Based on initial exhibitor reaction, the 1970 AFS Show is anticipated as the largest in Society history.

The location of the 1971 Casting Congress in Milwaukee was unable to be confirmed since the May 10-14 dates were cancelled by the Hotel Pfister, preferred as the headquarters hotel. Following discussion, the staff was directed to postpone finalizing alternate recommendations for 30 days, pending further discussion with the Pfister on different dates in 1971.

> It was duly moved, seconded, and carried that the Finance Committee be authorized to act on behalf of the Board to select the site of the 1971 Casting Congress prior to the July, 1969 Board Meeting.

It was reported that "Castings West," a regional exposition originally announced by its organizer for the promotion of casting products, has been expanded to also include materials and equipment for the manufacture of casting. There is no official participation in the event, in Long Beach, California on May 13-15, 1969, by either the Society or its chapters.

A new student chapter was added to the AFS Roster with official installation on March 4, 1969, the Rhode Island School of Design at Providence, R.I. Faculty Advisor is Mr. Thomas Moran and the sponsoring chapter is New England.

Report of Vice-President—Technology

As presented by the Technical Director, it was reported that approximately 85 papers will be presented during the 1969 Congress. Outstanding special technical presentations and operating sessions, in addition to the regular sessions, are expected to draw record participation.

The 1969 World Lecture will be presented by Mr. I. C. H. Hughes, of the British Cast Iron Research Association, England, in the place of a representative from France. France will provide the World Lecture for the 1970 Congress.

The AFS Electric Ironmelting Conference will be held on November 18-20, 1969 at Kellogg Center, Michigan State University East Lansing, Michigan. World-wide in scope, the conference is directed to operating foundry personnel concerned with the proper utilization of electric furnace equipment. Attendance will be limited to 375 registrants.

Report of Board Committees

(a) **Chapter Contacts Committee.** Vice-President O'Meara reported an excellent year of chapter contacts and 100% completion of assignments. He thanked all directors for completing their schedule and urged them to continue their support to Incoming Vice-President Clyde Sanders. He did note that several student chapters did not receive an official visitation in 1968-69 and that an expanded program in this area may be required.

(b) **Report of F.E.F. Trustees.** The annual meeting of the Foundry Educational Foundation was held at the Statler-Hilton Hotel, Cleveland, Ohio on March 19, 1969, was reported by Directors Kostenbader and DeGroot. The past year marked an increase in the number of Society members teaching foundry or foundry related courses at F.E.F. schools, a total of 121 during 1968-69 and up from 103 last year. The new F.E.F. schools were added to the program with student enrollment in courses related to cast metals up from 7,904 to 8,931.

The F.E.F. Trustees recommended that the Executive Director seek out a qualified candidate to serve as an assistant. Also, the current F.E.F. Board will re-evaluate performance at all F.E.F. schools and determine specific allocations for each individual school during the 1969-1970 year.

It was noted that F.E.F. schools expended over $353,000 last year in developing and maintaining modern foundry laboratory equipment.

Report on Training & Research Institute

Student enrollment in courses conducted since the February Board Meeting have shown marked increases, with the average per course now up to 28.9, or only slightly below the all-time average of 29.4 students per course. The 9-month 28.9 average compares favorably with the 23.0 average for the first six months of the fiscal year.

The two 35mm film strips on Career Opportunities in the metalcasting industry have been completed and are available from the AFS film library for distribution. Copies have been forwarded to sponsoring chapters; other chapters may purchase copies at $50.00 each.

A third programmed learning course, "Principles of Metallurgy," is expected to be added to the series sometime during this summer.

Report on Investment Trust Review

The President announced the appointment of the following to serve as members of the Investment Trust Review Committee:

A. Hunt, Chairman
C. Carter
J. O'Meara, ex officio
C. A. Sanders
A. Slichter
E. R. May
A. B. Sinnett, ex officio

Recommendations of Retiring President

President Ames requested that the Board consider the following basic recommendations:

(1) That the Board, through its officers, continue to moti-

vate T&RI, Technical Council, and Research Board to generate long-term plans and develop policy consistent with their charged responsibility.

(2) That continuing emphasis be placed on corporate participation through chapter involvement.

(3) That a program be developed that will rekindle interest of students as Junior members.

(4) That a committee be established to review the Company, Sustaining, and Research Patron Membership dues structure in order to make it more equitable to both the chapters and Central Office, and that possible incentives be established.

(5) That the Finance Committee review accounting procedures with a view toward determining whether Society accounting procedures should be modified to a cash basis.

(6) That an International Committee be established that will work with the staff to organize the 1972 International Congress consistent with their requirements.

Adjournment

There being no further business to be discussed, the meeting was declared adjourned.

Respectfully submitted,

WALTER A. SCHAW
Secretary

OFFICIAL PROGRAM

26th ANNUAL AFS CHAPTER OFFICERS CONFERENCE

AFS Headquarters and Pangborn Memorial, Des Plaines

June 5-6, 1969

THURSDAY, JUNE 5

7:30 am Group Breakfast
8:55 am Call to Sessions
9:00 am "Why" AFS and Where it is Going?
A report by the President on policies of AFS directing its current activities and shaping the Society's future leadership role in the Cast Metals Industry.

"New Technology . . . Its Origins"

9:15 am Technical Organization and Activities
Organization and structure
Staff role and what it means
Value and obligation of participation
9:40 am AFS-T&RI Research
Research objectives, expansion
How Research is selected
Future of AFS Research
How the membership benefits from Research

"New Technology at the Local Level"

10:00 am Chapter Technical Liaison
Proposed activity to expand direct technical communications at Chapter level.
10:10 am Technical Information Services
The new Current Awareness Program, its success and application
How the retrieval system works
Report of the total program's growth
10:25 am Coffee Break

"Membership Growth . . . Takes off"

10:40 am Report on 1968-69 Activity
Impact of Membership Campaign
Key Lessons for 1969-1970
10:55 am Successful Membership Campaigns
Pat Dirom ..... Piedmont
George Doak ..... Saginaw Valley
Carl Metzloff ..... Western New York
Joe Jarosz ..... Northeastern Ohio
11:25 am Group Membership Discussion
11:40 am Luncheon
1:05 pm Call to Sessions
1:10 pm How to Organize the 1969-1970 Membership Campaign
Analysis of potential
Targets and Priorities
Committee Organization
Individual Member Campaigns
Corporate Campaigns
1:25 pm Computer/Promotion Membership Aids
How to use chapter galleys
Non-member sources for solicitations
1:35 pm Questions & Discussion
1:45 pm Technical Communications
(a) MODERN CASTING—how it serves the industry with editorial leadership
(b) CAST METALS RESEARCH JOURNAL—its role in collecting and disseminating new technology from world-wide sources
(c) AFS BOOK PUBLICATIONS—the total program, its growth and status in providing key technical references to the industry
2:20 pm Questions & Discussion
2:30 pm Coffee Break
2:45 pm T&RI—Intensive Industry Courses
The Institute Program—scope, application and growth
Course Expansion—Regional Programs—Scheduling
Support of Chapter Courses—Course Results
Future Developments
3:00 pm T&RI—Other Education Activities
Instructors Seminar—June 1970
On Campus—Seminars—Workshops—Credit Courses
Programmed Learning Courses
Apprentice Contest

3:15 pm Chapter Education Activities
Importance of Education Committee and Activities—Kit Material
Career Guidance Activity (Filmstrip)
Mechanics of Conducting High School-Teachers' Courses
Central Office Assistance—Literature, Speakers, Publications
3:55 pm Questions & Discussion
4:05 pm The Impact of air Pollution and In-Plant Environment Control Requirements
Latest developments and effect on industry
The Society's SH&AP Service—Who is eligible
How to organize local committee action
4:50 pm Wrap-up—Announcements
6:00 pm Social Hour . . . "On The house"
7:00 pm Annual Conference Dinner

FRIDAY, JUNE 6

7:30 am Group Breakfast
8:55 am Call to Sessions

"Chapter Programs . . . Our Most Important Product"

9:00 am Conduct and Arrangements of Meetings
9:30 am Building Better Chapter Programs
How, when to plan—select subjects—speakers—evaluate programs
9:45 am "Successful Program Ideas"
Lee Egalnick ..... Texas
Jim Robinson ..... New England
Bob Gardner ..... Detroit
Gerald Wilkes ..... Birmingham
10:15 am Group Program Discussion
10:30 am Review of Key Points
10:35 am Coffee Break
10:50 am Planning the Regional Conference
Elements of a successful Regional Conference
Central Office assistance available
11:00 am 1970 AFS Casting Congress & Exposition

"Effective Chapter Administration"

11:10 am Nomination & Election of Society Officers
The organization of the AFS Board
The Chapter's opportunity and responsibility
11:20 am Regional Administration meetings
The reason "for" and importance "of"
Schedule of 1969 RAM Meetings
11:30 am Chapter Officer Responsibilities
Who does what—and why
AFS Reference Manuals
11:40 am Chapter Finances
Record keeping hints
Handling for IRS forms
Areas for investment—T&RI, Scholarships, F.E.F.

11:50 am Luncheon
Demonstration of AFS computer system
1:00 pm Call to Sessions
1:05 pm Workshop Sessions

(a) Education Workshop
How to sponsor a Regional T&RI Course
Chapter Education Night, other special Chapter programs.
How to Promote Cast Metals in Secondary Schools
Personnel Recruitment
Chapter & Plant Activities

(b) Chapter Program Workshop
How to select speakers
Central Office Assistance
Speaker's List—Film Directory
Importance of advance planning

(c) Chapter Publicity
How to get publicity in MODERN CASTING
Effective Meeting Announcements
What to write in News Releases
Why Promotion is important

(d) Management-Membership Workshop
How to organize a Corporate Membership drive
Role of Management Luncheons
Central Office Assistance

1:40 pm Break for Workshop Rotatioin
1:45 pm Workshop Sessions Repeat
2:20 pm Workshop Summaries
Education .....
Chapter Program .....
Chapter Publicity .....
Management-Membership .....
2:35 pm Shakeout
Final session. Last chance to have any remaining questions answered . . . or to offer general comments from the floor.

Attendance

Society Officers and Directors	10
Chapter Chairmen	31
Chapter Program Chairmen and Vice-Chairmen	40
Chapter Secretaries and Treasurers	13
Chapter Membership Chairmen	2
Chapter Directors	4
Chapter Section Chairmen	1
TOTAL	101
No. Chapters Represented	49
No. Chapters with 2 or 3 Delegates each	36